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EDITORIAL.

THE medical profession of this country is greatly indebted to the Philadelphia *Record* for its recent attempt to put an end to the fraudulent selling of diplomas in that city. No one who has had opportunities for judging of the character of medical instruction in the leading colleges of the United States can doubt that their alumni are, as a class, as well qualified for the practice of medicine as are those of European schools. But the influence of these bogus Philadelphia institutions has been such that American diplomas of every sort have been looked upon with suspicion abroad, and this has too often served as a pretext for abusing the character of American degrees generally.

No better evidence of the equivocal value of an American degree can be given than the following official certificates which an alumnus of the University of Pennsylvania found it necessary to have engrossed on the back of his diploma, in order that it might serve as a voucher for his professional standing during a visit to Paris, where he intended to pursue medical studies:

Know all men by these presents,

That I, William S. Stokley, Mayor of the City of Philadelphia, do hereby certify that the University of Pennsylvania, within mentioned, is a lawfully constituted and incorporated College of Learning under the laws of the Commonwealth of Pennsylvania, United States of America, and that it is an Institution of the first order in the Country.

In witness whereof I have hereunto set my hand and affixed the Corporate Seal of the City of Philadelphia, this Twentieth day of March, in the year of our Lord, One Thousand Eight Hundred and Seventy-Eight.

[SEAL.]

WILLIAM S. STOKLEY,
Mayor of Philadelphia.

Nous, Vice-Consul de France à Philadelphie, Etat de Pennsylvanie, Etats Unis de l'Amérique du Nord, certifions que la signature opposée cidessus est véritablement celle de M. Stokley, maire en exercise de la ville de Philadelphie, et que foi doit y etre ajoutée. En temoignage de quoi nous avons signé les présents et y avons appliqué notre sceau.

Fait à Philadelphie, le dixième jour du mois d'Avril, mil-huit cent soixante dix-huit.

[SEAL.]

RAVIN d'ELPEUX.

Philadelphie, 195, 10 Avril, '78,
170, 12.00, Douze francs, RE.

Consulate at Philadelphia,
State of Pennsylania,
United States of America.

I, GEORGE CRUMP, Her Britannic Majesty's Vice and Acting Consul for the States of Pennsylvania, Ohio, Illinois, Michigan, Indiana, Iowa and Wisconsin, do hereby certify that the within degree of Doctor of Medicine of the Medical Department of the University of Pennsylvania, granted to ——— ———, Esq., is a true and genuine Degree issued by the Medical Faculty of said College, and that said College has been in existence over one hundred years, is one of the first schools of learning in the United States, and the graduates thereof are entitled to all the faith and confidence granted to any of the Colleges of the United States.

In faith and testimony whereof I do hereunto set my hand, consular seal, at the city of Philadelphia, this seventeenth day of April, A.D., 1878.

[SEAL.]

GEORGE CRUMP.

It is a matter for surprise that the University of Pennsylvania should have made so little effort to protect its good name, and contented itself with saying, simply, that the University of Philadelphia and the University of Pennsylvania were totally distinct bodies, and that those who would take the trouble to do so might learn the difference.

IN our recent remarks concerning the fitness of women for the pursuit of pharmacy, we were wrong so far as relates to the opposition to their *registration* as pharmacists in Great Britain. The trouble they have met with consisted in securing membership in the Pharmaceutical Society, and it was not until last year that this barrier was overcome.

MATERIA MEDICA, PHARMACY, AND THERAPEUTICS.

[Original Communication.]

ON DILUTED PHOSPHORIC ACID.

BY ROBERT O. LEHN.

The deposits and impurities found by Mr. P. C. Jensen in diluted phosphoric acid, as detailed in the May number of this journal, page 131, were probably occasioned by the phosphate of calcium present in the glacial phosphoric acid, as well as organic matter in the water used in the manufacture of the specimens examined. A perfectly pure article of glacial phosphoric acid is seldom found in the market; instead of being a soft gummy mass it is usually found moulded into sticks largely contaminated with phosphate of calcium or sodium; the latter substances being added in order to give it consistence. This renders it objectionable to use in the manufacture of the dilute acid, not only on account of the impurities it contains, but the product is frequently much deficient in strength. The process is much employed, however, on account of its easy manipulation. The first process recommended by the Pharmacopœia is objectionable on account of the danger attending its use: when trying to dissolve the phosphorus in the dilute nitric acid, particles of phosphorus becoming disengaged would strike against the upper part of the apparatus, ignite, and break it, and not unfrequently the mixture explodes. The method proposed by Prof. Markoe is open to the same objections, the addition of the bromine forming an even more dangerous compound than the other. Another is the iodine process; this consists in the oxidization of the phosphorus by the intervention of iodine without the application of heat. A working formula is given in the following:

Take cleaned phosphorus, 360 grs.; nitric acid, 5 troy ounces; iodine, 2 grains; and water, q.s., mix and set aside. The phosphorus may be cleaned by immersing it in a weak solution of chromic acid water. The iodine acting on the phosphorus produces iodide of phosphorus, this is decomposed by the water into phosphoric and hydriodic acids, and these reacting on the nitric acid again produce iodine which again acts on the phosphorus, until the latter has been entirely oxidized.

$$PI_5 + 4H_2O = H_3PO_4 + 5HI$$
$$6HI + 2HNO_3 = 4H_2O + 3I_2 + 2NO$$

When the phosphorus is dissolved, evaporate to 2 ounces and dilute with distilled water to measure 20 fluid ounces and filter. All the nitrous acid vapor should be expelled, and if red vapors are still given off when concentrated, it should be diluted and again evaporated. This process, aside from its interesting chemical reactions, is the simplest and perhaps the best adapted to the wants of the retail pharmacist. Requiring no heat in the oxidization of the phosphorus, it is readily manipulated by any one, and the product I have always found to be reliable as regards purity and strength, and developing neither organic fungous growth nor deposits on long standing.

Du Quoin, Illinois.

[Original Communication.]

PHOSPHORIC ACID.

BY J. U. LLOYD.

In 1858, Mr. Wm. S. Thompson suggested the employment of a formula, at that time in use by Mr. Geo. Andrews, to wit:—Mix 54 fluid ounces of nitric acid with 26 fluid ounces of water and add four troy ounces of phosphorus, place in a porcelain dish over which is to be inverted another dish, and heat gently until the phosphorus disappears, and afterward, until the nitric acid is driven off. This process was subsequently adopted by the U. S. P. (1860) in its essential points, but instead of an inverted dish a glass funnel was substituted, the rim of which rested just above the liquid. Prof. Diehl called attention to the defect of this arrangement in 1867, stating that the funnels often broke, and he recommended a return to the first form of apparatus for making phosphoric acid, *a glass retort*. This I feel is desirable. When the air within the funnel becomes warm, it rises and passes through the exit. The place is supplied with fresh air which enters between the dish and the funnel and just over the *surface* of the liquid, becomes heated, and in turn escapes at the top. Thus a constant flow of fresh air is the result, entering between the dish and the funnel, passing over the solution escaping at the exit of the funnel. A more perfect and simple apparatus for producing a flow of air in the manner designated, according to the laws of nature, could scarcely have been designed, and from the fact that it *does this*, it is objectionable, the effect being as follows:

When the heat is applied to the dish which contains the diluted nitric acid and the phosphorus, the phosphorus melts, and as the bubbles of gas escape which are a result of the reaction they carry small globules of phosphorus to the surface of the liquid. Immediately these inflame and the phosphorous pentoxide escapes with the air from the exit of the funnel. As the liquid decreases in bulk from evaporation and its specific gravity increases, the phosphorus rises easier and more abundantly and the combustion progresses more rapidly. This increases the heat within the funnel and strengthens the draft, particles of burning phosphorus are thrown upon the funnel, and the intense heat produces its destruction. Thus it will be seen that, even though the heat of a water-bath be employed, or an expanded steam-bath, a very large amount of phosphorus is lost, considerable danger in-

curred, and an acid is produced which is deficient in strength. To an extent this trouble may be overcome by employing a funnel the exit of which is closed with a stopper, or better, by placing a plate of glass over the top of the dish and dispensing with the funnel. Neither of the foregoing is equal to the glass retort, however, in the estimation of the writer, and yet with this a few precautions are necessary in a practical way.

When heat is applied to the retort, the phosphorus melts, and, as before stated, small globules of it are carried to the surface. There meeting with oxygen they burn until the oxygen within the retort is consumed. These small burning globules of phosphorus often float to the side and thus break the retort at the very commencement of the process. To obviate this trouble it has been my custom to pass carbon dioxide into the retort and displace the atmosphere before applying heat. If a two gallon retort be employed, and 6⅝ oz. avoirdupois of phosphorus, 48 oz. avoirdupois of nitric acid, and 64 fluid oz. of water, the heat of an expanded steam (or water) bath applied 60 hours will dissolve the phosphorus. There will be no loss of phosphorus by combustion. The temperature of the liquid during the reaction will range about 208° or 210° F. The retort should be connected with a condenser and the distillate collected. This will contain about 10% of nitric acid and may be employed in subsequent operations instead of water for the purpose of mixing with the nitric acid. The process of the Pharmacopœia from this point seems very simple, "continue the heat until the excess of nitric acid is driven off, and a syrupy liquid, free from odor, and weighing two ounces, remains." This in practice, according to my experience, is more difficult than dissolving the phosphorus. It requires a very high heat to drive off the nitric acid, a heat often sufficient to produce both meta- and pyrophosphoric acids.

To overcome this trouble, I make the following suggestion. Evaporate the liquid within the retort until it is reduced to the measure of sixteen fluid ounces, then remove the heat, cool until reduced to the temperature of 130° F., and add *deodorized* alcohol as much by measure as there is of the solution. Then evaporate on a water-bath until reduced to sixteen fluid ounces. Nitrous ether will be evolved, and when the reaction has ceased it will be found that the bulk of the nitric acid will have disappeared. In case it is still present in appreciable amount (?), again add sixteen fluid ounces of deodorized alcohol and warm until the alcohol is evaporated and the temperature reaches 200° F. and all odor of nitrous ether has passed away. Lastly, add of distilled water a sufficient amount to bring the solution to the required gravity or q. s. to make 160 fluid ounces.

It will be found in practice that if the alcohol is impure the acid will be discolored. A little *purified* animal charcoal will decolorize it in this case.

Acidum Phosphoricum Dilutum.

Diluted Phosphoric Acid.

Take of

Phosphorus, *three parts*	3
Nitric acid, *twenty-five parts*	25
Alcohol, *eight parts*	8
Purified animal charcoal, *one-fourth part*	¼
Distilled water	q. s.

Mix the nitric acid with forty-eight (48) parts of distilled water, and pour the mixture into a tubulated and stoppered glass-retort capable of holding twice the amount. Then add the phosphorus and pass carbon dioxide into the retort until the air is displaced. Now connect the exit of the retort with a condenser, stop the tubulure of the retort, and apply the heat of a water-bath until the phosphorus has disappeared. Then pour the liquid into an evaporating basin, and evaporate it until reduced to eight (8) parts. Then add sixteen (16) parts of distilled water and pass sulphide of hydrogen into the solution until the gas is in excess. Permit the mixture to stand twelve hours and then filter it through a plug of cotton placed in the exit of a glass funnel. Evaporate this solution by means of a water-bath until it is reduced to eight (8) parts, and cool it. Then add the alcohol and evaporate it on a water-bath until there remain eight (8) parts.* If it is colored, or retains a burnt odor, mix the animal charcoal with it and digest one hour, then add of distilled water an amount sufficient to bring it to sixty (60) parts, and filter it through a plug of cotton placed in the exit of a funnel, returning the first that passes and reserving it only after it becomes colorless.

Characteristics of this diluted phosphoric acid are the same as those of the acid made from amorphous colorless.

I find that pharmacists dislike to handle ordinary phosphorus. This is natural, as it is both dangerous and disagreeable. Many times heretofore *amorphous* phosphorus has been recommended for making phosphoric acid, and certainly much can be said in its favor. The following formula is not in the least dangerous:

(From Amorphous Phosphorus.)

Acidum Phosphoricum Dilutum.

Diluted Phosphoric Acid.

Take of

Amorphous phosphorus, *three parts*	3
Nitric acid, *twenty-five parts*	25
Alcohol, *eight parts*	8
Purified animal charcoal, *one-fourth part*	¼
Distilled water	q. s.

Mix the nitric acid with ninety-six (96) parts of distilled water in a porcelain capsule of twice the capacity of the mixture, and add the phosphorus. Place the capsule on a water-bath and heat it until the phosphorus is dissolved, then evaporate the solution until it is reduced to eight

* Observe note to succeeding formula on next page.

(8) parts. Permit it to cool, then add sixteen (16) parts of distilled water and pass sulphide of hydrogen into the solution until the gas is in excess. Permit the mixture to stand twelve hours and then filter it through a plug of cotton placed in the exit of a glass funnel. Evaporate this solution by means of a water-bath until it is reduced to eight (8) parts, and cool it. Then add the alcohol and evaporate on a water-bath until there remain eight (8) parts.* If it is colored, or retains a burnt odor, mix the animal charcoal with it and digest an hour (this is unnecessary in case it is colorless and odorless); then add of distilled water an amount sufficient to bring it to sixty (60) parts and filter it through a plug of cotton placed in the exit of a funnel, returning the first that passes and reserving the solution only after it becomes colorless.

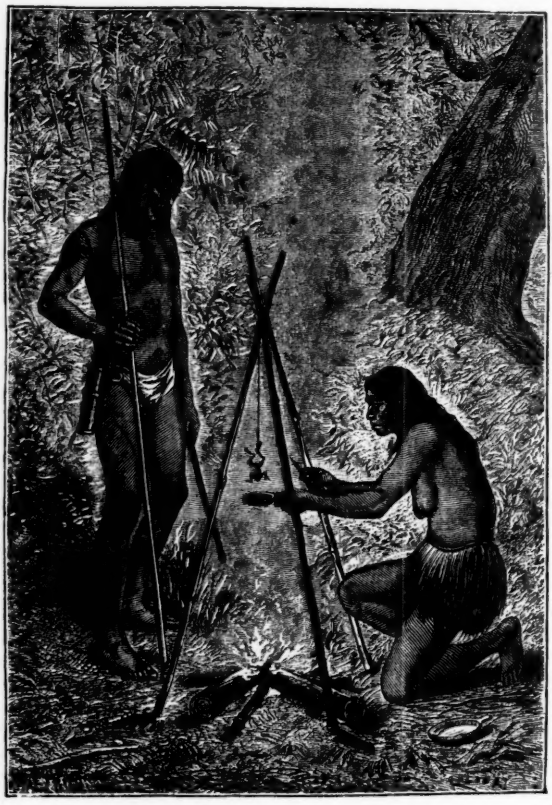
Char.—A colorless, inodorous liquid, of the spec. grav. . . . It is not rendered black by nitrate of silver, nor turned white or whitish by bichloride of mercury (absence of phosphorous acid). When gently warmed it does not deposit a bright-yellow sediment, after being saturated with sulphuretted hydrogen, and after standing at rest for some time (absence of arsenic acid). A crystal of pure sulphate of iron introduced into a cold mixture of equal parts of sulphuric acid and of the diluted phosphoric acid may render it pinkish, but does not produce a black or brownish color in the liquid (absence of excess of nitric acid). No precipitate is produced by chloride of barium (absence of sulphuric acid), or nitrate of silver (absence of hydrochloric acid), when either of them are added in small proportion. It produces no precipitate with an equal bulk of tincture of chloride of iron after standing for several hours (absence of pyro- and metaphosphoric acids).

100 parts of it are saturated by . . . parts of bicarbonate of potassium and no precipitate is produced.

* It must be remembered that nitrous ether is inflammable, therefore the near application of a flame must be avoided at this point.

The Frog-Poison of the Natives of Colombia.

WHILE the botanist and traveller Ed. André was at Cartágo (State of Popayan), during 1876, for the purpose of collecting living orchidaceous plants for Europe, he met at the Rio de la Viéja an old negro, Pedro, the same who had previously accompanied the explorers Gustav Wallis and Roezl, and whose services he also engaged. One day, he brought him a frog, which he said he had caught at great risk to himself. It was a small, lank animal, of lemon-yellow color above, with black legs and abdomen, which is met with in the *tierra templada* at an elevation 1,500 to 2,000 metres above the level of the sea. In the province of Chocó, it is called *neaard*, and is feared as a most poisonous animal, for which reason the Indian tribes of the Cunas, Noanamas, and Chocóes, which inhabit the immense virgin forests of Chocó, use the poison of this frog, in place of urari, for killing game. This is done by means of arrows shot from a blowing-tube (*bodoquera*), of about three metres in length, which is made from two halves of a palm-stem, wound about with fibres, tightened with a black gum. The arrows are made from young bamboo-shoots. The poisonous *neaard* is obtained by the Chocóes in the district of the Rio Tatamá. (It has also been met with by the botanist Triana, in



Colombian Indians preparing Arrow Poison.

the forests of Tamana, on the road from Cartágo to Novita.) The Indians guard their hands by winding around them broad leaves, and after having caught the frog, inclose it into a piece of bamboo, and suspend it by the hind legs over fire. This causes the frogs to exude an acrid-yellow liquid, into which the arrows are dipped. If a larger quantity of the poison is wanted, the process is conducted in the manner shown by the illustration, which is a sketch from life by Mr. André. Bamboo-sticks having been put together over the fire, the frog is suspended from them, and the exuded poison is caught by a woman, who collects it by means of a sort of scraper or spatula, in a small earthen vessel (*ollita*), in which it gradually assumes the consistence of curare. The arrows are not dipped into the poison until the latter has solidified. In this condition the natives carry it about with them in their quivers. The effects of the poison are said to be precisely similar to those of curare, as it is innocuous when swallowed, but, if introduced into the blood, speedily causes a paralysis of the vital powers. It is said to require 3 to 4 minutes to kill a bird, 2 minutes to kill a deer, and 4 to 8 minutes to kill a jaguar. An antidote is not known; if any of the natives happens to wound himself with one of the poisoned arrows, he at once lies down, knowing he will speedily die. André believes that a compression and interruption of circulation in the injured member, and subsequent cauterization would probably be found effective antidotes.

The *neaará* is a small frog of the genus Phyllobates, which has no palatal teeth, but a tongue attached in front and free behind. Andre considered it to be a variety of *Ph. bicolor*, of Cuba, which, however, lives upon trees, while the Colombian frog does not climb. A Colombian physician, A. Posada Arango, who has carefully studied the animal, proposes to make a new species of it, *Ph. Chocoensis;* but André prefers to name it *Ph. bicolor*, var. *toxicaria*. According to him, the frog is found in the shady virgin forests of Chocó, between Anserma Viéjo and Novita, also in the forests of Tatamá, about the sources of the Rio San Juan, and generally about 78–79° West. long. (fr. Paris) and 5° North lat.—*Die Natur*.

The acrid or poisonous character of the exudation of certain frogs and toads has been the subject of investigation by various experimenters. The skin of toads, etc., exudes not only pure water, but also a peculiar slimy matter, produced in a large number of glands, and which it appears may be voluntarily increased in quantity by the animal. It seems to be mostly butyric acid, has a strong odor, and is very acrid, causing considerable pain on the skin, and sharp burning on the tongue. Davy found that the exudation of toads produced on the skin about the same effect as extract of aconite; Gratiolet and Chloez found that it would kill small birds on inoculation, and Röbbeler has made the same observation on small dogs, rabbits, and other small animals.*

Kerner's Quinine Test.

Some time ago a new test for the purity of sulphate of quinine was published by Dr. O. Hesse.† This was based upon the following two facts:

1. Water, at a temperature of 50–60° C., dissolves quinia sulphate but sparingly; but it dissolves the other sulphates easily, without decomposition, that is, without separating free alkaloids.

2. If the solution, after cooling, is supersaturated with ammonia, and shaken with a definite quantity of ether, sufficient to dissolve the quinia which should be present, this quantity of ether will be insufficient to dissolve the other alkaloids, whenever they are present beyond a certain percentage.

In a recently published paper, Kerner denies the accuracy of this test, and says that it is liable to lead and has already led to erroneous conclusions. He maintains that his original ammonia-test is sufficient, not only to prove the *commercial* purity of sulphate of quinia, but also when examining minute quantities or when making scientific determinations: in either of these cases it may be employed as a method of titration. For this purpose it is first requisite to obtain an ammonia solution of exactly determined behavior towards a cold saturated solution of absolutely pure quinine. The previous titration of the normal solution of quinine which gives the exact titer of the ammonia, and the subsequent titration of the sample of quinine to be examined, which *may* consume as much, but generally consumes more ammonia, because it is not quite pure, furnish the data for the determination of the sulphate of cinchonidine. On an averge 0.288 cubic centimetres, or short, $\frac{3}{10}$ cc. of a solution of ammonia of 0.920 spec. gr., correspond to 0.001 gm. of crystallized sulphate of cinchonidine. If it is desired to obtain an approximate knowledge of the quantity above or below a certain limit, in which sulphate of cinchonidine is present, this may also be accomplished by the ammonia test by a slight modification. One part of the sulphate of quinine is mixed, in a test-tube, with 10 parts of distilled water at 15° C., strongly agitated, and after half an hour the liquid is filtered at 15° C. Of the filtrate, 5 cc. are transferred to a cylinder, holding 10 cubic centimetres divided into $\frac{1}{10}$, and 3 cc. of a solution of ammonia of 0.92 are added, when the contents are mixed by turning. If the quinine salt had been entirely pure, the liquid

*Compare particularly: *Brehm's Thierleben*, 2d ed., Vol. vii., p. 537. Leipzig, 1878.

† *Arch. d. Pharm.*, 1878, Dec. Translated, with additions, in New Rem., 1879, 139.

would be clear, but in most cases it will be turbid. Ammonia is now added in further small portions, until the end-reaction, that is perfect limpidness, makes its appearance. The consumption of ammonia is then read off. Assuming now that 5 cc. of ammonia are required to render 5 cc. of a quinine solution transparent, which latter contains 1% of sulphate of cinchonidine, and further assuming that, in absence of the latter, 3 cc. of the ammonia solution are sufficient to produce transparence, we have a sufficiently wide distance between the two limits to determine the presence of cinchonidia in very small quantities.

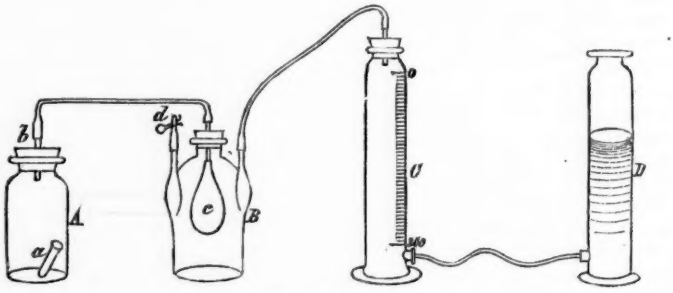
Dr. Geissler, while quoting the above in the *Pharmac. Centralhalle*, adds that practically it seems useless to object to very small percentages of other cinchona alkaloids, as any sample of sulphate of quinine which bears the ammonia test may be employed in practice. For the purposes of assay or scientific investigations more refined methods may be chosen. But he thinks it of at least equal, if not greater, importance to control the amount of water of crystallization in the sample of sulphate of quinine, which should never exceed 14.5 to 14.6% (on drying at 115° C.), because the therapeutic effect of the salt is hardly affected by the substitution, in minute quantities, of one cinchona alkaloid for the other, but is greatly affected by the substitution of a certain percentage of water for active alkaloid.—*Pharm. Centralh.*, 1880, 121.

Apparatus for the Estimation of Carbonic Acid Gas.

In the estimation and assay of alkalies and acids, recourse is often had to one or another of the many forms of apparatus in which the amount of real acid or alkali present is determined by the volume or weight of liberated carbonic acid gas, or else by the loss of weight caused by the escape of the latter. Some time ago, Scheibler proposed an apparatus in which the eliminated carbonic acid gas was collected, and from its volume the amount of true alkali or acid determined.

His apparatus, however, had a few drawbacks which led Dr. F. Salomon to introduce some improvements, so as to produce the apparatus here described.

A is a vessel intended for the development of the carbonic acid gas. The test-tube *a* is made of hard rubber, and is charged with a carefully weighed quantity of the acid or of the alkali to be assayed. Of course, if an acid is to be tested, a sufficient quantity of a carbonate must be placed in the bottom of the vessel *A*, and if an alkali is to be tested, acid must be introduced into the vessel *A*, so that on gently inclining it, the test-tube will upset and acid and alkali will mix. *B* is a glass vessel having three necks; the central wide neck is closed with a sound stopper through which passes a tube to which is attached a rubber bag. One of the necks of *B* is connected with the measuring jar *C*, and the latter with the flask *D*, partly filled with water. The use of the apparatus is best shown by a practical example. Supposing an *alkaline carbonate* were to be assayed. In this case, 0.5 to 1.5 gm. of the salt are placed in the rubber test-tube *a*, acid is introduced into the vessel *A*, and the cork loosely inserted. The cork of the



Carbonic Acid Apparatus.

middle neck of the vessel *B* being tight, air is blown into it through the tube *d*, until the rubber-bag has collapsed completely, whereupon the cork *b* is at once tightly inserted. Of course, the rubber-bag must have such a capacity that all the carbonic acid gas given off is not sufficient to bring it to a stretch, but to fill it merely partially. While the pinch-cock at *d* is still kept open, the cylinder *D* is raised until the water has risen in the measuring flask to the mark *o*, when the stop-cock is closed, and the cylinder *D* is replaced on the table. The level of the water in the measuring flask will recede a little from the mark *o*, but, if the apparatus is tight, it will shortly sink no further. The height is carefully marked. Now the test-tube in *A* in caused to upset, whereby the acid in the jar will mingle with the alkali in the tube and produce an evolution of carbonic acid gas, which passes onward and causes a distention of the rubber bag exactly in proportion to the volume given off. The distention of the bag, on the other hand, results in the displacement of a

corresponding volume of water from the cylinder *C*. By carefully elevating or depressing the cylinder *D*, the level of the water in both cylinders is made equal and the volume of displaced water in *C* read off. This figure, duly corrected for temperature and barometric pressure, will give the exact weight of the carbonic acid gas set free, and consequently the amount of true carbonate in the sample.

As the liquid remaining in *A* retains a small quantity of carbonic acid gas, which makes the results a trifle too low, the author recommends the following expedient to avoid this: Repeat the assay twice, using double the quantity of the assay-subject in the second experiment. As the amount of liquid in both is the same, the latter can, in either case, only retain one and the same quantity of gas, so that the second half of the sample actually yields its full theoretical amount of gas. Supposing, in the first trial, 108 cc. of CO_2 had been set free, and in the second experiment, when exactly double the amount of substance had been taken, 220 cc. Hence, there was a deficiency of 4 cc., which must be charged to the first experiment, and the corrected figures are 112 cc. for the first, and 224 cc. for the second experiment.—*Dingler's Polyt. Journ.*

Diseases Produced by Coal-Tar Colors.

THE far-famed establishment of Messrs. Meister, Lucius, and Brüning, at Höchst, Germany, offers opportunities for the study of special diseases produced by coal-tar colors not to be met with elsewhere. It employs over 1,000 workmen, besides 40 foremen and managers, 25 chemists, 1 engineer, and 30 clerks. Everything is conducted in the most systematic manner. Each class of colors is prepared in separate work-rooms; thus we read of the blue house, the violet house, the eosin and napthol houses, etc. A stringent rule provides that no workman shall enter any part of the establishment save his own department. A very close watch is kept upon the health of all persons employed, and —a very important feature—the use of arsenic in the manufacture of magenta has been abandoned in favor of Coupier's process. There is consequently no danger that the physiological action of magenta and its derivatives may be complicated by arsenical impurities. Every precaution is taken to obviate dangers; the arrangements for ventilation are very complete. Any apparatus giving off noxious gases is placed in connection with the chimney. Rooms containing combustible and explosive materials are illuminated solely by the electric light on the principle of Siemens and Halske.

Among the raw materials benzol, napthalin, and anthracene have been carefully examined as regards their action upon human health. Benzol is admittedly poisonous. It has repeatedly proved fatal when experimentally administered to animals. If the vapor is inhaled by man it produces irritation of the nervous centres, dizziness, ringing in the ears, nausea, and drowsiness. Only one serious case is recorded in medical literature, which, however, terminated in recovery.

Naphthalin is not to be feared, except in the state of very hot vapor. If taken internally it irritates the stomach, but none of the experiments made upon animals have had a fatal result. Anthracene has an irritating action upon the mucous membranes, but it has not proved injurious to the workmen. Nitro-benzol has been made the subject of extended experiments as well as clinical observations. The symptoms produced are difficulty of breathing, dizziness, drowsiness, tonic and clonic convulsions; but death often occurs from general paralysis. These morbid phenomena sometimes do not commence until after twenty-four hours have elapsed. Medical literature records forty-four cases of acute poisoning in human subjects, fourteen of which proved fatal. The possibility of a chronic or cumulative action is not decided. No case of sickness from nitro-benzol has occurred at Höchst, though of the eight men in this department one has been employed for six years, one for eight, two for nine, and one for ten years. The poisonous nature of aniline, including both the pure base and the so-called aniline oil of commerce, is indisputable. Many recorded clinical observations are untrustworthy, as it does not appear whether the poison was raw aniline or some of its derivatives contaminated with arsenical or mercurial compounds. Three cases of "anilism" have been observed among the thirteen workmen employed in this branch.

Contrary to a very general opinion, rosaniline and its salts prepared without arsenic have been found harmless. The urine of the men employed in the magenta house has been specially tested for albumen, but with a negative result. Eczema and erythema do not occur among the workmen. Dr. Grandhomme considers that the irritation of the skin said to have frequently arisen from the use of stockings, etc., dyed with magenta is doubtless a consequence of the presence of arsenic. The derivatives of rosaniline, aniline-blue, violet, green, etc., are also harmless. Eosin and erythrosin produced no injurious symptoms when taken by rabbits. The workmen in the eosin house, however, do not enjoy good health. Of seventeen persons employed in this department sixteen are annually unwell, chiefly from hyperidrosis localis. The naphthol colors are not to be regarded as dangerous, the cases of illness in this department being chiefly due to slight wounds. In the alizarin house, the most prevalent diseases are affections of the skin, concerning the origin of which Dr. Grandhomme is not yet satisfied. In the entire establishment the cases of illness which could in any way be traced to the nature of the employment formed only 3 per cent of the total cases. Hence it may be

well questioned if the manufacture of coal-tar colors can be regarded as a specially dangerous employment.—From a review of "*Die Theerfarben-Fabriken der Herrn Meister, Lucius and Brüning, etc.*" In *Chem. News*, May 7th. (See title on page 214.)

Enzinger's Universal Quick Filter.

In the following we describe a new filtering apparatus, which is patented in Germany and other countries by L. A. Enzinger, of Worms, and which is very strongly indorsed by a number of prominent manufacturers.

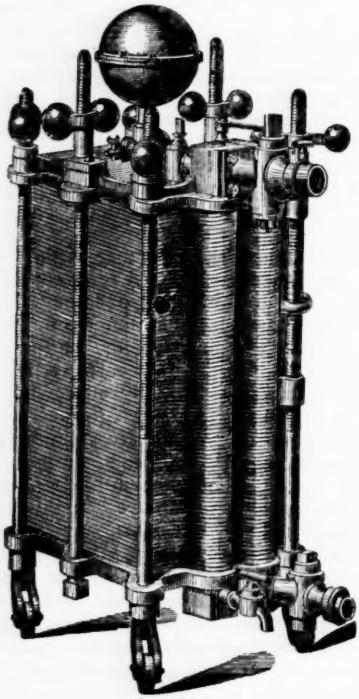


Figure 1.

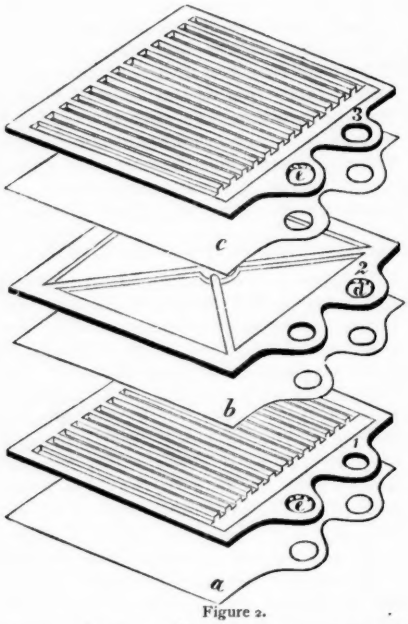


Figure 2.

It is well known that, in most cases, a clear filtrate can be obtained only by employing filtering paper. In the press about to be described, filtering paper may be used in full-sized sheets, without being liable to be torn by the pressure exerted by the fluid during filtration.

Figure 1 represents the whole press, which may be moved about on rollers. Upon the bed-plate are piled the filtering frames which are about 5 millimetres in thickness, and the construction of which will be understood from Fig. 2, where the thin sheets, *a*, *b*, *c*, represent layers of, filtering paper. The liquid to be filtered enters by a large stop-cock, situated at the bottom (to the right), into the vertical channel, formed by the round openings of the filtering frames, in the following manner. Supposing we remove any three contiguous filtering frames with paper (see Fig. 2) and number the frames respectively 1, 2, 3, and the sheets of paper *a*, *b*, *c*, it will be noticed that the filtering frames 1 and 3, and consequently all those having *odd* numbers, differ in construction from the frame 2 or those of even numbers. Each frame also has two circular holes, which, when arranged one on top of the other, form two circular channels. Now the holes (on the right hand) in the *even* frames 2, 4, etc., receive the muddy liquid to be filtered, which passes through small openings in the inner margin (see *d*, Fig. 2) into the interior of the filtering frame. The latter being covered with paper on both sides, the clear liquid is forced through both ways and collects in the channel represented by the apertures *e*, *e*, etc. Hence the vertical channel on the right hand (see Fig. 1) is always filled with turbid liquid, and the channel at the left hand with clear filtrate, which may be drawn off by means of the large stop-cock at the top.

This form of press is in use in chemical factories, color-works, distilleries, breweries, wine-depots, oil-mills, and various other establishments, where large amounts of liquid are to be filtered with the least loss of time.

According to the nature of the liquid to be filtered, the filtering medium may be varied, so that either felt or flannel or filtering paper may be used. It is important to use a medium of such a texture as will just barely retain the solid impurities and permit the clear liquid to pass.

Of course, the nature of the liquid to be filtered exercises a good deal of influence on the ease and rapidity of filtration. Mucilaginous liquids filter more slowly than saccharine liquids, even if both are of the same specific gravity; those which are very muddy and concentrated filter more slowly than brighter and less concentrated liquids; alcoholic solutions and oils filter more slowly than aqueous solutions, and cold liquids more slowly than hot.

Detailed information respecting the size, capacity, price, etc., of this form of press may be obtained from Mr. Herman Rüdinger, 241 South Second street, Philadelphia, Pa.

On Lemon Juice and Citric Acid Liquors.

(*Concluded.*)

General Remarks.—A very pure preparation has been introduced by the Montserrat Lime Juice Company. The producers grow their own limes on the island of Montserrat, and by care in the preparation of the juice, and proper precautions to avoid fermentation, they obtain and export a very superior product. Citric acid juices lose some of their acidity by concentration. Warington observed a loss of 3.5 per cent of the total free acid on concentrating English-pressed juice to one-sixth of its original bulk. The loss is due, at least in part, to the presence of volatile organic acids, which, of course, exist in much smaller amount in concentrated juice. Warington found 1.25 per cent of the total acidity of concentrated juice to be due to volatile acids. Among the latter were recognized formic, acetic, and probably propionic acids.

The following table shows the density, free acid, and combined organic acid (the two last, expressed in terms of crystallized citric acid, $H_8C_6H_5O_7.H_2O$) of the various citric juices commonly met with in commerce:—

	Density.	Free acid, oz. per gallon	Combined organic acid, oz. per gallon
Lemon juice—			
Raw Sicilian.....	....	6–9	0.85
" English.....	1.04–1.05	11–13	0.3
Concentrated....	1.20–1.25	56–72	6–8
Bergamot juice—			
Concentrated.....	1.22–1.25	47–55	7–8
Lime juice—			
Raw.....	1.035–1.040	10.6–13.5	0.4–0.7
Concentrated....	1.28–1.38	82–112	8–6

From this table it will be seen that English pressed juice contains more free and less combined acid than the raw Italian and Sicilian juice. This is probably due to the fact that the finest and ripest fruit is sent to England, while the windfalls and damaged fruits are treated locally. Concentrated lemon-juice is considered of *standard* quality when it contains free acid equal to 66.87 of crystallized citric acid ($C_6H_8O_7+H_2O$) or 64 oz. of nominal acid ($2H_3CI+H_2O$). The *Board of Trade standard* for lemon-juice is a density of 1.030 (without spirit), and an acidity equivalent to 30 grains per ounce (= 11 ounces per gallon) of citric acid. According to the British Pharmacopœia, lemon juice should have a density of 1039, and should contain 32½ grains of acid per ounce (= 11.9 oz. per gallon); but Stoddart says that this density is too high for the proportion of acid.

Concentrated bergamot juice is far less acid than lemon juice, while concentrated lime-juice is a thick viscid fluid far exceeding the others both in density and acidity. Lemon and lime-juices are extensively employed as antiscorbutics. The ash of lemon-juice has been found to contain 54 per cent of potash and 15 per cent of phosphoric acid; but as the proportion of mineral matter is very small, it is difficult to attribute the effects of lemon-juice to the constituents of the ash. Adulterated lime and lemon juices are not uncommon. The production of considerable precipitates with barium chloride and silver nitrate sufficiently indicates the presence of sulphuric and hydrochloric acids respectively: pure juices containing merely insignificant traces of sulphates and chlorides.* Free sulphuric acid may also be determined as in citric-acid liquors (see below), and both that and free hydrochloric acid by the methods for the determination of mineral acids in vinegar.†

According to F. D. Scribani,‡ nitric acid has recently come into use for the adulteration of lemon-juice. On concentrating such juice, the nitric acid decomposes the citric acid, either wholly or partially, with formation of oxalic, acetic, and carbonic acids; so that on neutralizing the juice with lime, a mixture of calcium salts is obtained. To detect the nitric acid, Scribani adds to the juice an aqueous solution of ferrous chloride, strongly acidulated with pure hydrochloric acid and quite free from ferric salt. The liquid is then boiled for a few minutes, and, after cooling, tested with a thiocyanate (sulphocyanide). If the liquid contain nitric acid, a more or less deep-red color will be produced, owing to the formation of a ferric salt.

This test is said to answer equally well in presence of common salt or sulphuric or tartaric acids.§ In boiled and dark-colored juices dilution is necessary before the color can be observed.

h. Citric Acid Liquors.

This term is applied to the liquors resulting in citric acid works from the treatment of the citrate of calcium with sulphuric acid. Their assay is limited to the determination of the contained citric and sulphuric acids. For this purpose the total acidity may be determined by

* Sea water has been added to lemon-juice, and would, of course, react with silver nitrate.

† Either by Hehner's method, or by Hilger's; the latter is given in NEW REM., 1876, 146.

‡ *Gaz. Chim. Ital.*, VIII., 284. *Journ. Chem. Soc.*, II., 1878, p. 914.

§ A more satisfactory and direct test for nitric acid would be to boil the juice with metallic copper, when red fumes will be produced if nitric acid be present.

titration, and the free sulphuric acid then estimated. By subtracting the acidity due to the latter from the total found by titration, that due to citric acid alone is ascertained. The free sulphuric acid is determined by treating 10 or 20 cc. of the liquor with five times its volume of strong alcohol. After twelve hours, a portion of the clear liquor is treated with more alcohol, and, if opalescence result, the whole is treated in the same way. The liquid is ultimately filtered, the precipitated sulphates washed with spirit, and the filtrate precipitated with an alcoholic solution of calcium chloride. The precipitated calcium sulphate is allowed to settle completely, the supernatant liquor poured off, and the precipitate and small quantity of remaining liquor *gently warmed*. The alcohol is gradually displaced by cautions additions of small quantities of water, and when the precipitate has become crystalline from its conversion into gypsum, alcohol is added, and the precipitate collected on a filter, washed with spirit, ignited, and weighed as $CaSO_4$. The weight multiplied by .7206 gives the sulphuric acid (H_2SO_4) in the liquor taken.

Another method, which agrees well with the last, is to neutralize exactly a known measure of the liquor with pure caustic soda, evaporate to dryness, and ignite gently in platinum. The ash is wholly dissolved in a known quantity of standard acid and the excess of acid ascertained by titration with alkali. (In presence of iron or aluminium, some neutral sodium tartrate or Rochelle salt should be added before titration.)

The acid neutralized by the ash is equivalent to the organic acid contained in the liquor used. In old liquor, the citric acid should be precipitated as calcium salt, as other organic acids will be present in serious amount. For this purpose, the liquor is treated exactly as directed for juice under *d*.

Notes on Chian Turpentine.

Mr. R. Molden contributes to the *Pharm. Journ. and Trans.* of May 15th a paper from which the following is taken: "A recent paper in the *Lancet* (March 27th) having strongly recommended the use of Chian turpentine in cases of uterine cancer, I am induced to offer a few notes on the history of the drug. There is nothing original in them, they are merely extracts from works not generally accessible, but may prove of some interest.

Terebinthina Chia is a liquid resinous exudation from *Pistacia Terebinthus* L., a handsome tree growing in most parts of the south of Europe, but especially in the Greek Archipelago. As *P. cabulica* it extends also to Beluchistan and and Afghanistan, and as *P. atlantica* it is found in North Africa. These different species are, however, considered by Flückiger and Hanbury as being merely slight variations of *P. Terebinthus*. In Languedoc and Provence it is a straggling bush, in Palestine it is a handsome umbrageous tree.

The resinous juice is secreted in the bark, in special cells, precisely as mastic is formed in *P. Lentiscus*. To some extent it exudes spontaneously, but in greater abundance after incisions are made in the stem and branches. A large tree will yield from 6 to 11 ounces in a year. The harvest is from the end of July to October. In 1701 Tournefort visited Scio, when that island was said to produce scarcely 300 Okas (oka = 2.82 lb. avoir.). A century later, Olivier stated that 200 okas was about the average yield. The trade is almost entirely in the hands of the Jews who usually dispose of the gum in the Turkish empire. In Greece it is sometimes used to flavor cordials, or mixed with wine in the same manner as mastic. The gum, as usually found in commerce, is a soft solid, becoming brittle by exposure to air. It is of a yellowish green color, and is composed of a resin and a volatile oil. All accounts agree in stating that it is extremely scarce in Western commerce, coniferous turpentine being substituted for it. Dr. Pereira says it has an odor somewhat resembling fennel. By keeping it acquires a somewhat less agreeable odor. It is soluble in rectified spirit, amylic alcohol, glacial acetic acid, benzol or acetone, and pure ether, the solution in each case being slightly fluorescent. An alcoholic solution reddens litmus and is neither bitter nor acrid.

Chian turpentine was well known to the ancients. It was the *Τέρμινθος* of Theophrastus. Dioscorides, of Anazarba, in Cilicia, who wrote his great work on materia medica A.D. 77 or 78, describes it as a finer sort of mastich. He says "there is also a resin in the lentisk (*Pistacia Lentiscus*), called lentiscine; by many, mastich. It is added to dentrifices, and to face liniments. The best resin and largest quantity come from the island of Chio. The best is shining, like Tyrrhene wax in color, large, easily crumbled, and fragrant. There is a green sort, but not so useful."

Even in the time of Dioscorides there seems to have been need of an Adulteration Act, for he says, "It is mixed with frankincense and fine turpentines."

In chapter 91 of Book I. he says, speaking of another substance which Sir R. Christison says is that known at present as Chian turpentine, "that the kernels of the fruit are edible, but disagreeable to the stomach. It acts as a diuretic and is used in wine for diseases of the finger joints. The resin is imported from Arabia Petræa; it also grows in Judæa, Syria, Cyprus, Lybia, and Cyclades. This resin is by far the finest of any; then comes mastich, pine and larch resins (turpentines). After these may be reckoned fir resins. It is very fit to give in cough and in wasting away. It is given either by itself or mixed with honey." He gives also a list

of other diseases in which it was used at that time.

After being almost unknown in England, except as a botanical curiosity, the attention of the medical profession has been drawn to the substance by Professor Clay, of the Queen's Hospital, Birmingham, as a cure for uterine cancer (vide the *Lancet*, March 27th).

In a previous number of the *Pharmaceutical Journal*, the editor said that a specimen of the kind of Chian turpentine used by Dr. Clay appeared to be not free from the suspicion of containing Canada balsam, of which it possessed the odor to a certain degree." [Note by ED. N. R.—We have seen a specimen of so-called Chian turpentine, sold in New York, which is nothing else than Canada balsam.]

On the Preparation of Liquids of a Fixed Specific Gravity, without the Use of Percentage-Tables.

ONE of the most frequently recurring tasks, in pharmaceutical laboratories, is the adjustment of of a solution to a certain specific gravity, for which purpose it must either be diluted or concentrated. Many attempt to accomplish this by adding or evaporating at random as much of the solvent as they guess might probably be sufficient, in which case they run the risk of overstepping the mark, and will then be compelled to do the work all over again. With the aid of percentage tables this risk may be easily avoided, since, knowing the amount of substance already in solution, it is an easy matter to determine, by mere inspection of the table, the additional amount requisite either of the solvent, or of the dissolved substance. In all those cases, in which, by addition of fresh quantities of solvent, a sensible amount of heat is either given off or absorbed, it is quite impossible to determine, by calculation alone, the proper quantity of either solvent or dissolved substance, without the aid of such tables. To discuss the use of these tables, for such purposes, on this occasion, is quite unnecessary, as they are sufficiently well explained in pharmaceutical handbooks, calendars, etc. But these tables are either not always ready to hand, or, for many purposes, there are no tables in existence. This is the case, for instance, with tincture of opium, solution of subacetate of lead, glycerin, solutions of extracts, etc. I have so far seen no rule given in any text-book, how the quantity of liquid or solid to be added may be calculated in such cases. Nevertheless the occasion for making such alterations in liquids is not unfrequent. But it generally surprises us unprepared, and consequently, we are apt to resort to guess-work.

As may naturally be expected, an inquisitive pupil, after having learned the methods of determining specific gravity, will ask the question whether it is not possible to determine the amount of water required to reduce a solution of certain specific gravity to a lower gravity, by a calculation from these specific gravities themselves. This question is sure to occur, and has been put to me so often that I found it necessary to make an examination of the different possible cases which may occur in practice, primarily for my own purpose. And as it may be presumed that an elucidation of the subject may be of advantage to others, I have thought it to be of service to publish my method of solving the problem.

*The specific gravity of a liquid is the weight of one cubic centimetre of it.** If we have solutions of which 1 cc. is heavier than 1 gram, or in other words, heavier than 1 cc. of water, it is easily understood, that

the volume of a liquid is to the volume of the same liquid diluted with water, inversely as the two specific gravities less 1.

Supposing 1 cc. of milk weighs 1.034 gm., then the spec. grav. of this milk is $\frac{1.034}{1} = 1034$. If we now dilute with 1 cc. of water, we obtain 2 cc. of liquid, of the weight 2.034. The specific gravity of this liquid is then $\frac{2.034}{2} = 1.017$. In this case the specific gravities, less 1, are *inversely* as the volumes of the two liquids:

$$1 : 2 = 1.017 - 1 : 2.034 - 1$$

Now this same inverse proportion not only obtains in the case of liquids heavier than water, but also in those lighter than water. Supposing we have a water of ammonia of spec. gr. 0.98, and add to 1 cc. of it, 1 cc. of water, then the mixture will measure (approximately) 2 cc. and will weigh 1.98 gm., and the sp. gr. of the mixture will be $\frac{1.98}{2} = 0.99$. The proportions are:

$$1 \text{ cc.} : 2 \text{ cc.} = 0.99 - 1 : 0.98 - 1$$
$$1 \text{ cc.} : 2 \text{ cc.} = -0.01 : -0.20$$

But these simple proportions are true only in such cases where a dilution does not abnormally alter the volume of the resulting liquid, that is, either when the liquids are highly dilute, or when only a small quantity of water is added. For instance, in the last-named example the resulting volume is in reality a little less than 2 cc.; hence the true specific gravity is somewhat higher than 0.99.

But, since the dilution of a liquid is mostly accompanied by a contraction of the volume, there will be no risk, in the case of liquids heavier than water, to carry the dilution too far. The application of the theorem that, on diluting aqueous solutions with water (without contraction taking place) the volumes are to each other inversely as the specific gravities less 1, may be illustrated by the following example.

1000 gm. of solution of subacetate of lead,

* Or of 1000 cubic centimetres. In the former case the the spec. grav. is based on water = 1; in the latter on water = 1000.

spec. grav. 1.24, are to be reduced to the spec. grav. 1.235 by the addition of water. The volume of the given solution must here bear a proportion to the required solution as

$$(1.235 - 1) = 0.235 \text{ to } (1.24 - 1) = 0.24.$$

But the volume of 1000 gm. solution of subacetate of lead of spec. gr. 1.24 is $\frac{1000}{1.24} = 806.4$ cc.

Putting the volume of the diluted solution $= x$, we have the proportion :

$$0.235 : 0.24 = 806.4 \text{ cc.} : x \text{ cc.}$$
$$x = 823.5$$

Hence it is necessary to add to the stronger solution

823.5 cc. − 806.4 cc. = 17.1 cc. or 17.1 gm. of water, to bring it to the spec. grav. 1.235.

Using the preceding example, with alteration of the respective figures, it is possible, with the aid of it, to solve all similar problems which may occur. It is only to be remembered that the figure 1, which had to be deducted, above, from the specific gravity, is the weight of 1 cc. of water, or in other words, the *specific gravity of the diluting liquid.* Hence the problem may be stated in general terms as follows :

The volume of the liquid to be diluted is to the volume of the diluted liquid as the specific grav. of the diluted less the spec. grav. of the diluting—is to the specific grav. of the undiluted less the spec. grav. of the diluting liquid.

Though the basis on which this proposition rests is simple and easily comprehensible, yet experience has taught me that many persons prefer to calculate by a formula, rather than to lay out the plan of the calculation for each separate case, where a somewhat different train of thoughts may be necessary. I myself do not favor such formulæ; yet, if such calculations are to be made very frequently, a formula may help to save time. Hence I shall develop such a formula in the following :

Let W = Weight of diluted liquid.
w = weight of undiluted liquid.
Sp = Spec. Grav. of diluted liquid.
sp = spec. grav. of undiluted liquid.
$\sigma\pi$ = spec. grav. of diluting liquid.
V = Volume of diluted liquid.
v = volume of undiluted liquid.

As shown above, the volumes are *inversely* of the specific gravities *less* the specific gravity as the diluting liquid. Hence we have:

$$v : V = (Sp - \sigma\pi) : (sp - \sigma\pi) \text{ or}$$
$$V \times (Sp - \sigma\pi) = v \times (sp - \sigma\pi)$$

Hence :
$$V = \frac{v\,(sp - \sigma\pi)}{Sp - \sigma\pi.}$$

Now we know that the *volume* is equal to the *weight*, divided by the *spec. grav.*, thus :

$$V = \frac{W}{Sp} \qquad \text{and} \qquad v = \frac{w}{sp}$$

Substituting these values in the above equation for V and v respectively, we obtain :

$$\frac{W}{Sp} = \frac{\frac{w}{sp}\,(sp - \sigma\pi)}{Sp - \sigma\pi} = \frac{w\,(sp - \sigma\pi)}{sp\,(Sp - \sigma\pi)}$$

Multiplying both sides of the equation with Sp, we obtain :

$$\text{I.} \quad W = \frac{w \times Sp\,(sp - \sigma\pi)}{sp\,(Sp - \sigma\pi)}$$

and

$$\text{II.} \quad w = \frac{W \times sp\,(Sp - \sigma\pi).}{Sp\,(sp - \sigma\pi)}$$

To find the Weight (W) to which a liquid of a given weight (w) and spec. grav. (sp) is to be brought, in order to reduce it to a required Specific Gravity (Sp): *Multiply the weight of the undiluted liquid with the required Specific Gravity, and with the given specific gravity less the specific gravity of the diluent; and divide the product by the required specific gravity multiplied with the difference between the given specific gravity and that of the diluent.*

In the following are given some examples which serve to show how often such calculations are called for and how they may be solved.

Problems :—1. To what weight is it necessary to dilute 1000 gm. of solution of subacetate of lead, in order to reduce the spec. grav. from 1.250 to 1.235 ?

2. How much diluted alcohol of spec. grav. 0.9396 must be used to reduce 1000 gm. of tincture of opium from spec. gr. 0.986 to 0.979 ?

3. How much nitric acid of spec. gr. 1.185 and how much of spec. gr. 1.40 must be mixed together, to produce 5 kilos of nitric acid of spec. gr. 1.300 ?

4. To what weight is it necessary to evaporate 1000 gm. of solution of acetate of potassium, spec. gr. 1.170, in order to bring up the spec. gr. to 1.180 ?

5. It is required to prepare 1 kilo of glycerin of spec. gr. 1.20 from glycerin of spec. gr. 1.26 by adding water.

6. How great is the spec. gr. of a 2 per cent solution of an extract, if a 4 per cent solution has the spec. gr. 1.0383 ?

7. Skimmed milk has a spec. gr. of about 1.038. About how much water does a skimmed milk of spec. gr. 1.024 contain ?

8. A tincture of opium, prepared by extracting 4 parts of opium with 38 parts of alcohol of spec. gr. 0.9396 is to be brought to a spec. gr. of 0.980. In consequence of an error in weighing the opium, it is found that 1000 gm. of the tincture has a spec. gr. of 0.960. How much opium had been used in preparing it; and how much additional opium must be extracted by the tincture, so that the required spec. gr. be reached ?

Solutions.—

Ad 1) $w = 1000$; $sp = 1.25$; $Sp = 1.235$; $\sigma\pi = 1$

$$W = \frac{1000 \times 1.235\,(1.25 - 1)}{1.25\,(1.235 - 1)} =$$

$$\frac{1000 \times 1.235 \times 0.25}{1.35 \times 0.235} = \frac{1235 \,.\, 0.25}{1.25 \,.\, 0.235} = 1051 \text{ gm.}$$

1000 gm. of subacetate of lead solution of 1.25 spec. gr. must, therefore, be mixed with 51 gm. of water to acquire the spec. gr. 1.235.

Ad 2) $w = 1000$; $sp = 0.986$; $Sp = 0.970$; $\sigma\pi = 0.9396$

$$W = \frac{1000 \times 0.979\ (0.986 - 0.9396)}{0.986\ (0.979 - 0.9396)} =$$

$$\frac{1000 \times 0.979 \times 0.0464}{0.986 \times 0.0394} = \frac{45.4256}{0.0388484} = 1169 \text{ gm.}$$

Hence 169 gm. of alcohol of spec. gr. 0.9396 must be added to 1000 gm. of the tincture of opium, to reduce it to the spec. gr. 0.976.

Ad 3) $W = 5000$; $Sp = 1.30$; $sp = 1.40$; $\sigma\pi = 1.185$.

$$w = \frac{5000 \times 1.40\ (1.30 - 1.185)}{1.30\ (1.40 - 1.185)} =$$

$$= \frac{5000 \times 1.40 \times 0.115}{1.30 \times 0.215} = 2884$$

According to the calculation, in order to obtain 5 kilos of nitric acid of spec. gr. 1.30, it would be necessary to mix 2.884 kilos of spec. gr. 1.40 and 2.116 kilos of spec. gr. 1.185. But as the mixed liquid develops heat, the calculated spec. gr. in this case will be too high. In such cases it is better to consult percentage tables.

Ad 4) $W = 1000$; $sp = 1.18$; $Sp = 1.17$; $\sigma\pi = 1$

$$w = \frac{1000 \times 1.18\ (1.17 - 1)}{1.17\ (1.18 - 1)} =$$

$$= \frac{1000 \times 1.18 \times 0.17}{1.17 \times 0.18} = 952.3 \text{ gm.}$$

Accordingly, the solution must be evaporated to 952.3 gm. to raise the spec. gr. from 1.170 to 1.180.

Ad 5) $W = 1000$; $sp = 1.26$; $Sp = 1.20$; $\sigma\pi = 1$

$$w = \frac{1000 \times 1.26 \times 0.2}{1.20 \times 0.26.} = 788.4$$

Hence 788.4 gm. of glycerin of 1.26 must be diluted with water to 1000 gm., to make 1000 gm. of a glycerin of spec. gr. 1.20.

Ad 6) If 100 gm. of 4 per cent solution are to be reduced to 2 per cent by the addition of water, they must be diluted to 200 gm. These 200 gm. occupy a volume of $\frac{1.0383}{100} + 100 = 96.3 + 100 =$ 196.3 cc. Hence the spec. gr. of the 2 per cent solution is $\frac{200}{196.3} = 1.0188$.

Ad 7) Since the volumes of aqueous liquids, on dilution, are *inversely* as the specific gravities less 1, the following proportion will give the solution:

$$(1.024 - 1) : (1.038 - 1) = 100 : x$$

$$x = 158.3$$

Hence 100 *volumes* of skimmed milk of spec. gr. 1.038 have been mixed with 58.3 volumes of water.

The weight of added water may also be deduced by means of the general formula:

$w = 100$ (milk of 100 per cent); $Sp = 1.024$; $sp = 1.038$; $\sigma\pi = 1$

$$W = \frac{100 \times 1.024\ (1.038 - 1)}{1.038\ (1.024 - 1)} =$$

$$= \frac{100 \times 1.024 \times 0.038}{1.038 \times 0.024} = 156.2$$

Accordingly, 100 parts by *weight* of milk were mixed with 56.2 parts by *weight* of water. This result agrees completely with that found before, for, by calculation we find that the 56.2 parts by *weight* correspond to the above 58.3 parts by *volume*, namely:

$$\frac{100}{1.038} : 100 = 56.2 : x. \quad x = 58.3$$

Ad 8) In this problem, the tincture of opium of spec. gr. 0.96 is the diluted liquid, alcohol of spec. gr. 0.9396 the diluent, and tincture of opium of spec. gr. 0.980 the weight of the liquid, which has been erroneously diluted by excess of alcohol; (this liquid here represents really the "undiluted liquid" of the general formula). It is required to find the weight (w) of the latter.

$W = 1000$; $Sp = 0.96$; $sp = 0.98$; $\sigma\pi = 0.9396$

$$w = \frac{1000 \times 0.98\ (0.96 - 0.9396)}{0.96\ (0.98 - 0.9396)} =$$

$$= \frac{1000 \times 0.98 \times 0.0204}{0.96 \times 0.0404} = 51.54$$

The 1000 gm. of tincture of opium, the sp. gr. of which is too low, therefore consist of 51.54 gm. of officinal tincture of opium (spec. gr. 0.980), and of 484.6 gm. of alcohol of spec. gr. 0.9396. For this amount of spirit the corresponding quantity of opium is to be calculated from the formula in the Pharmacopœia, and to be digested with the 1000 gm. of tincture.—E. Mylius, in *Archiv der Pharm.*, 1880, May, 336.

A New Blast-Lamp.

For the purpose of regulating the proper supply of gas and air in blast-lamps, it has been hitherto customary to provide them with stopcocks. But the necessity of interrupting the work whenever it is desired to alter the size or character of the flame, by turning one or another stopcock with the hand, is in many instances a great inconvenience. To remove this difficulty, Mr. Julius Schober has constructed a new kind of blast-lamp in which the supply of gas and air is regulated by a rotary pinion, which may be easily turned by two fingers. This arrangement permits the operator to adjust the flame at any moment, without being compelled to remove his hands from the work or

to interrupt the necessary turning of the object in the flame. The blast-tube is revolvable around two centres in a vertical direction, and is firmly retained in any position. The access of air takes place from the posterior, that of gas from the lateral tube. The nozzle end of the blast-tube may be slid forward or backward, so as to avoid the occurrence of a luminous or smoky flame.

To generate the requisite blast of air, Mr. Schober recommends, in place of the cumbersome blow-pipe table or the inconvenient box-bellows, a strong air-reservoir of black devulcanized rubber, which may be compressed either by the hand or the foot or by holding under the arm. Another most useful form of bellows is that of Fletcher (see description and illustration in this journal, 1877, p 360), which produces a continuous blast of air, and takes up but little room.—*Zeitschr. f. anal. Chem.*, 1880, p. 170.

Tonga : a reputed Remedy for Neuralgia.

A PAPER was published in the London *Lancet* of March 6th by Professors Sidney Ringer and William Murrell, giving details of the use of "*Tonga*" in eight cases of neuralgia, six of which were promptly cured, one was much improved, and in the other a week's trial of the remedy failed. The drug was brought to Prof. Ringer by a gentleman residing in Fiji, named Mr. Ryder, with the following account: "It has been used for several years by the aborigines of the Fiji Islands, and a European who married a chief's daughter learned the secret from his father-in-law, in whose family the knowledge of the composition (*sic*) of this remedy had been an heirloom for upwards of 200 years." Mr. Ryder described the drug as a mixture, and knew nothing of its botany, and the name "tonga" was, according to report, invented by himself; the drug previously bearing the name "Neuralgia Medicine."

A supply of about 8 lbs. of this drug was placed by Professor Ringer into the hands of Mr. A. W. Gerrard, F.C.S.,* who gives the following account of it:

"Tonga, as first placed in my hands, consisted of small loose bundles about the size of a small Florence flask, containing in the interior a mixture of bark, leaf, and woody fibre; the outer covering or wrapper consisted of the inner bark of the cocoa-nut tree. The following instructions were given for its use: The bundle, without being unfastened, to be steeped in a half tumbler of cold water for ten minutes; then squeeze the liquid from the bundle back again into the tumbler, and take a claret-glass of the infusion three times a day, about half an hour before each meal; dry the bundle and hang it up in a dry place to prevent it getting mouldy; it will answer for twelve months. Hot drinks and exposure to cold winds should be avoided whilst taking the medicine.

"Mr. Ryder and his friends have tried the remedy extensively and found it very successful, curing by the second or third day. It has also been used in Sydney with much success. The drug, upon separation into its various parts, was found to consist of about an eight per cent of leaf, two per cent of fibre, and the remaining portion bark. These proportions are not constant, on account of the rough mode of preparation. The leaf is cut or broken into small pieces which precludes a description of its form; its color is deep green; taste slightly bitter and astringent.

"The fibrous portion is of loose structure, chopped into irregular lengths, varying from one-half to two inches, and torn into shreds. No bark is attached, and there is nothing I can find in its structure to indicate with certainty whether it is root or stem. Its color is a dull, grayish-brown; odor peculiar, and may be termed urinous, and taste of the same kind. The bark is found in irregular-sized pieces, much broken, and partly in coarse powder, the majority of pieces consisting of inner bark rarely beyond a line in thickness; its color is not uniform, but varies from pale-brown to purplish-black; many pieces are brownish-yellow, due, I think, to undetached portions of outer bark; its taste is slightly sweet and astringent.

"*Examination of Bark.*—Sixty grams of bark in fine powder were divided into six parts, and treated, respectively, to exhaustion with hot benzol, benzin, ether, chloroform, alcohol, and water; the resulting solutions were allowed to evaporate, except those of alcohol and water, which were evaporated over a water-bath. The benzol, ether, and chloroform gave no residue worthy of examination; benzin gave a slight residue, consisting of an essential oil and a pale, fat-like substance. The amount being small, they were not further examined. Alcohol yielded an extract of pale-brown color, sweet and slightly astringent taste, and mostly soluble in water. The filtered watery solution of this extract, when tested for alkaloid, gave negative results, but readily reduced, when warmed, the alkaline cupric tartrate. The bulk of this alcoholic extract was dissolved in water, and treated to excess with basic lead acetate, filtered, and excess of lead removed with H_2S, filtered from lead sulphide and evaporated, when a pale-yellow tenacious residue was obtained, which by its chemical reactions I identified as glucose. The watery extract of the bark was examined, and during evaporation became pectinous. A portion treated with alkaloidal reagents gave negative results, but, like the alcohol-extract, readily reduced alkaline cupric tartrate; and further examination proved that, excepting the pectin, the watery extract does not differ essentially from that prepared by alcohol.

"*Examination of Fibre.*—The fibre portion of

* From whose paper on the subject, in the *Pharm. Jour.* of April 24th, we have taken the above article.

tonga being, unfortunately, very small in quantity, I have been obliged to limit myself to work upon ten grams. Five grams were exhausted with water, and the infusion, upon concentration and addition of necessary reagents, gave strong evidence of the presence of an alkaloid. The semi-fluid aqueous extract, now treated with excess of alcohol, almost entirely passed into solution and, upon evaporation of the alcohol, was deposited as a brown crystalline residue of a deliquescent character; the crystals, upon examination, proved to be mainly chloride of potassium commingled with an alkaloid salt.

"The potash salt was removed by treatment with tartaric acid and alcohol, and the filtered alcoholic solution, when evaporated, left a pasty crystalline mass of an alkaloid salt, having the following reactions :—Moderately strong solutions gave white precipitates with potash, soda, and ammonia, hydrates and carbonates, also with mercuric chloride, to tannic acid, potash, mercuric iodide, phosphomolybdate of soda and nitric acid ; strong sulphuric acid changed it brown, evolving an odor of hawthorn flowers. When the solution is treated with caustic alkalies, the alkaloid is evolved, bluing red litmus paper ; the odor of the vapor is peculiar, and suggestive of decomposed potatoes. The vapor passed into dilute nitric acid gave a solution having the above alkaloid reactions. The remaining five grams of fibre was worked out with alcohol, and yielded results parallel to the above. The leafy portion of tonga being only a fractional percentage and its separation tedious, I did not consider it worthy of examination, neither do I think it takes any part in the action of the drug.

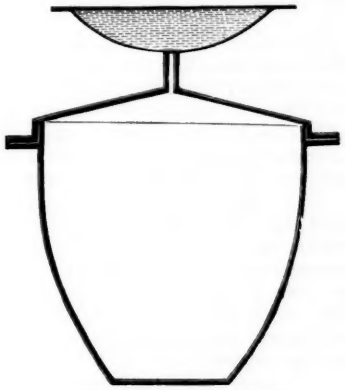
"*To summarize:* the preceding results show that the drug called tonga is composed mainly of a mixture of fibrous material, probably a root and the inner bark of plants, the botanical sources of which are unknown; the main constituents of the bark being pectin, glucose, a little essential oil and fat ; the fibre containing a volatile alkaloid, which is probably the active principle, and may for the present be named *tongine*, also some chloride of potassium. I trust we may soon command botanical specimens and larger supplies of this interesting drug, and be able to substantiate the reputation it bears, and prove it a valuable addition to our materia medica."

During the discussion of the preceding paper, at the Pharmaceutical Meeting of April 21st, Mr. E. M. Holmes stated his belief that the so-called root was the stem of a species of *Raphidophora*, probably *Raphidophora vitiensis* Seem. The bark he supposed to belong to a plant of the order Sapotaceæ ; but the leaf could not belong to this order, as sapotaceous plants usually had very thick leaves, entirely different from those of tonga.—*Pharmaceutical Journal*, April 24th.

Detection of minute Quantities of Mercury.

E. TEUBNER recommends for this purpose a modification of Eschka's gold-cover test, which consists in causing the vapors arising from the dried and faintly ignited substance to impinge against the bottom of a gold capsule filled with water placed over an opening in the crucible lid. Teubner's modification consists in causing the vapors to come in contact only with a small portion of the bottom of the capsule. The apparatus has the form illustrated in the cut; the height of the crucible, as well as its upper diameter, is about 4 centimetres ($1\frac{3}{4}$ inch.).

The finely powdered substance, dried as much as possible, is intimately mixed with well ignited iron filings and a little red lead, the mixture placed upon a layer of red lead in the crucible, covered with iron filings, the lid put on and luted with a paste made of lime. The crucible is



Apparatus for Detecting Mercury.

now placed over the lamp and a gold capsule containing water, properly supported, placed over the orifice of the tube ascending from the lid. The heating must proceed very slowly and must only be gradually raised to a faint redness at the bottom of the crucible. Any little drops of water which may first collect at the orifice of the tube must be removed by filtering paper. The operation is finished in a few minutes and any mercury present will be found deposited upon the exposed spot of the gold capsule. The identity of this deposit, if not too minute, may be established by bringing upon it a minimal drop of nitric acid, drying thoroughly on the water-bath, and then touching the spot with a strip of filtering paper moistened with a 1% solution of iodide of potassium. This causes the production of a characteristic red stain of mercuric iodide, disappearing again on applying an excess of iodide of potassium. If the diameter of the orifice of the tube be 1 millimetre ($\frac{1}{25}$ inch) so small a quantity as 0.0001 gm. ($=\frac{1}{640}$ grain) of mercury, and even less, may be recognized.—*Zeitsch. f. anal. Chem.*, 1880, 198.

Preparation of a Superior Glycerin-Jelly for Microscopic Purposes.

THE advantages of the glycerin-jelly for mounting botanical objects are too well-known to require discussion. Yet the comparatively rare employment of this form of mounting finds its explanation in the fact that a really perfect and microscopically pure glycerin jelly was heretofore of rare occurrence.

Dr. Edward Kaiser, however, has succeeded in preparing the latter, by the following process:

Soak 1 part of finest French gelatin in 6 parts of distilled water for about 2 hours; now add 7 parts of chemically pure glycerin and for every 100 parts of the mixture add 1 part of crystallized carbolic acid. Heat the whole, under constant stirring, for 10 or 15 minutes, until all the flakes (?) caused by the addition of the carbolic acid have disappeared. Finally filter the solution, while still hot, through very fine glass-wool which has been previously washed with distilled water.

The glycerin-jelly thus obtained is used, when cold, precisely like Canada balsam. It also forms an excellent embedding material for sections. If there is a risk of the objects falling to pieces after being cut—owing to their delicacy—it is necessary to leave them in the warm mixture until they are completely penetrated by the jelly. After the sections are completed and placed on the object-glass, that portion of the jelly which has permeated the tissues may be again washed out by a fine jet of warm water. Harder objects may likewise be embedded in this jelly, which latter may be hardened to any desired degree by treating it for 10 to 30 minutes with absolute alcohol.

Conversion of Hyoscyamine into Atropine.

IN continuation of previous papers, giving the results of his investigations on the alkaloids of solanaceous plants* Prof. A. Ladenburg, of Kiel, lately announced that he had succeeded in converting hyoscyamine into atropine.

When hyoscyamine is decomposed [with baryta or hydrochloric acid] it forms two new products which were heretofore denominated hyoscine and hyoscinic acid. Under similar conditions, atropine furnishes tropine and tropic acid. Ladenburg has now ascertained that both the acids, hyoscinic and tropic, and the secondary alkaloids, hyoscine and tropine, are identical. The author prepared a considerable quantity of the hyoscine, not, however, from hyoscyamine, but from the less costly daturine, the identity of which with hyoscyamine had previously been proven by him. 20 gm. of commercial daturine yielded 10 gm. of hyoscine. All physical and chemical properties of the latter agreed with tropine prepared from atropine. The identity of the products of decomposition of two substances which are not themselves identical, was so remarkable a phenomenon that the author was induced to try whether he could not prepare the alkaloid atropine, not from tropine and tropic acid (as he had already done previously) but from the decomposition-products of the other alkaloid. For this purpose the following three sets of experiments were made:

1. Tropine from atropine, and hyoscinic acid from daturine, were treated on the water-bath with diluted hydrochloric acid.

2. Hyoscine from hyoscyamine, and tropic acid from atropine, were similarly treated.

3. Hyoscine from hyoscyamine, and hyoscinic acid from hyoscyamine, in the same manner.

The produced alkaloids were precipitated by potassium carbonate, the precipitate dissolved by chloroform, and the latter evaporated. The residue was dissolved in diluted hydrochloric acid and precipitated with chloride of gold. This produced an oily salt, which soon solidified and which was recrystallized from water. In all three cases the product turned out to be atropine-gold, recognized both by its characteristic color and by its melting point.

Hence hyoscyamine may be converted into atropine, and, on decomposition, both of these alkaloids yield identical products.—*Ber. d. Deutsch. Chem. Ges.*, 1880, 607.

Chlorinated Cotton.

PROFESSOR CAV. CARLO PAVESI recommends the use of chlorinated cotton, as an effective and economical means of gradually diffusing chlorine gas through the atmosphere of surgical wards in hospitals, or as an external application in wounds which may require antiseptic treatment. In the latter case he preferably uses cotton which has previously been moistened with glycerin, since the latter seems to cause the chlorine gas to be retained for a much longer period.

The chlorinated cotton is prepared by placing into a large vessel with wide mouth a concentrated solution of commercial chloride of lime, which should not occupy more than one-eighth of the volume of the vessel, adding a small quantity of sulphuric acid [better, bisulphate of sodium or potassium, with water, ED. N. R.], and then suspending in the upper part of the vessel fine carded cotton, either dry or previously moistened with glycerin, in such a manner that the liquid itself cannot come in contact with it. The vessel is then carefully closed and set aside for 24 hours.—*Bolletino Farmaceutico* (Milano), 1880, 177.

* See NEW REM., 1879, 231; 1880, 138–139.

Botanisches Centralblatt is the title of a new weekly botanical journal, the object of which is to give a condensed review of all new discoveries and publications relating to botanical science as soon after their appearance as possible. The editor is Dr. Oscar Uhlworm, of Leipzig. The price of the journal (8vo) is 28 marks per year.

RECENT PAPERS.

Semi-Annual Review of the Commerce in Drugs and Chemicals.*

Aloes.—Cape aloes rose considerably in price during the past year, owing to the Zulu war, and the supplies had almost entirely ceased toward September. Since the close of the war, however, fresh supplies have reached the market, but the price (46*s.* per cwt.) is still considerably above that of last year (38*s.*). Barbadoes aloes was very scant, and brought as much as £11 15*s.* per cwt. between April and June.

Araroba or *Goa Powder.*—The market is at present overstocked, which has been the cause of a fall in price.

Balsam Copaiba.—The price of all kinds of copaiba has continued high from last fall, and has even gone up higher, as the supply has not kept pace with the rapid increase of consumption. The price of Pará balsam rose in London to 2*s.* 6*d.* per lb., against 1*s.* 3*d.* the year before, and Maranham rose from 1*s.* 6*d.* to 2*s.* 9*d.* Genuine Maracaibo is now very scarce in Hamburg.

The East-Indian "Copaiba-balsam," properly Gurjun balsam, or wood oil, which is but little used as such, finds always eager purchasers in London for certain places on the Continent, where the adulteration of balsam of copaiba with this and other substances is carried on as a regular business.

Balsam of Peru has reached a very high figure, owing to short supplies.

Benzoin.—Siam benzoin, which had become extremely scarce for several years back, has again become more frequent in the market; its high price, however, forbids its employment for the manufacture of benzoic acid. Only Palembang benzoin can be utilized for this purpose, and even this has risen considerably, in consequence of the enormous demand for benzoic acid and benzoate of sodium. Sumatra benzoin was tolerably abundant at reasonable prices.

Boldo leaves have become a favorite remedy in the United States, and are in steady demand.

Borax.—Both crude and refined borax have steadily advanced. English manufacturers have gradually raised their prices from about £35 per ton, in December, to £60 in April, and still have found ready purchasers for their next turnout. The consumption of borax has rapidly increased during the last few years, it being in particular demand for the "finishing" of bleached linen and cotton goods. The supply of the crude material, the crude boracic acid of Toscana, has kept pace with the demand, and the English manufacturers purchased so liberally that Lloyd, one of the largest owners of Italian boracic acid lagoons, discontinued his former practice of having the unsold excess of his production refined in England at his own expense. The brand "Lloyd" is, therefore, no longer in the market; the only remaining English brands are "Howards" and "Wood." Tinkal and Chilian borax-lime have, under these circumstances, almost ceased to have a commercial existence; but, at present prices, Californian borax may again be sold to advantage in Europe, and its advent will no doubt check any further advance in price.

Camphor has been an important object of Chinese and English speculators. The large imports in London during the first three months of the preceding year (13,393 colli) had been able to exert only a feeble pressure upon the summer prices, so that holders could, already in September, demand 77*s.* 6*d.* per cwt. for Chinese, and 82*s.* 6*d.* for Japanese camphor. From this period, they have succeeded in purchasing all supplies in London, as well as all arrivals in Hongkong, driving up the price by exactly 30*s.* per cwt. at the end of the year. This advanced price has been ruling ever since, and has lately even been put at 5*s.* higher. Although the stock of Japanese Camphor in Holland is very low, the London market appears to have enough for supplying the average demand; there were in London warehouses on March 1st, 3,777 chests, and 3,361 chests were under way from the East. The speculators, operating very quietly, began operations in China, driving the price from $17 to $23.50 per picul, buying up crude camphor, and causing retardation or complete stoppage of orders given by other houses. This happened even to Gehe & Co., with two separate orders for 500 chests each, one of which was even not limited in price, and both of which had been accepted.

Carica Papaya.—This name is applied to the juice of a tree bearing the same name (*Carica Papaya* L., nat. ord. Papayaceæ). It is obtained by making incisions in the tree, is neutral, of a milky character, and is used in its native country to hasten the softening of meat in boiling. It possesses, without doubt, an extraordinary digestive power, for it is reported that raw meat, boiled egg-white, gluten and fibrin are softened and dissolved by it, by digesting for several hours. If a method should be discovered to put it on the market in a durable condition, it might become an important article of medical consumption.

Cinchona.—After giving an account of the commercial relations, supply and demand, and prices concerning cinchona barks during the preceding six months, Gehe & Co. give some interesting notices on the cultivation and commercial assortment of cinchona barks. There are two different methods of estimating the value of commercial barks, one being used by manufacturers of quinine, the other being followed in supplying the demand of druggists or pharmacists for the preparation of powders, extracts, or tinctures. For manufacturers, the chief criterion is the intrinsic value, notably the percentage of quinine, and this is decided by analysis. It is different with druggists' bark, which is mostly handled in small lots, where the consumer is hardly willing to add the expense of an exact analysis. For this reason, the external characteristics are here taken as a criterion, experience having shown that they offer a tolerable certainty as to the average value of the bark. For druggists' use, a bark need, perhaps, not contain so much of the difficultly-soluble quinine, but rather more of the more easily soluble other alkaloids. (It is even reported that bark which has been utilized by pharmacists for the extraction of the latter, is not seldom sold to manufacturers of quinine, who manage to extract a paying quantity of the latter alkaloid.) At all events, the percentage of quinine is not the decisive criterion for pharmaceutical purposes. Hence the "succirubra" bark, which contains but little quinine, is preferred by druggists to the much more valuable "officinalis." The red bark trees (*Cinch. succirubra*) are larger, and, therefore, yield thicker and more handsome quills. It has become customary to demand them in regular pieces, if possible doubly rolled, about a foot long, or even longer. A particular value is attached to them if they have a silvery epidermis, with some scaly or fibrous mosses adherent to it. All these conditions are more easily fulfilled by the "succirubra" than by the "officinalis" bark. Although the silvery epidermis does not really add to the intrinsic value of the bark, yet it serves as an additional test of its identity. External characteristics being thus the chief criterion of druggists' barks, it is natural that a great stress should be laid on getting unbroken and handsome quills, which may be more easily examined than broken fragments. A bark which corresponds in all respects to the requirements, may fetch a 50–100% higher price than its chemical value would require, provided there is an active demand for this kind at the time. Manufacturers' bark is valued in an entirely different manner. Most of this is derived from South American uncultivated trees. While the London commission dealers select from each bale of druggists' bark a special handsome piece for exhibition as sample, they take from each package of manufacturers' bark a small sample, break it up as small as possible, mix all the samples taken from one bale together, and deliver samples of this mixture to the manufacturer for analysis. Manufacturers particularly prefer the so-called "mossed" or "renewed" bark, also the root-barks, and these are sold separately, provided the

* Abstract from the April Report of Gehe & Co., Dresden.

stock on hand makes it worth its while. For the same reason, the "officinalis" bark, which is rich in quinine, is kept strictly separated from the red bark. The former classification of barks, excepting always druggists' bark and that derived from small branches, which has its particular value, is no longer of any account in the market, as manufacturers select their barks on the basis of analysis, and not on that of physical characters, with the exception of the special barks mentioned above.

Coca leaves have arrived at the west coast of South America in sufficient quantities, in spite of the war. As is well known, coca leaves rapidly deteriorate if insufficiently dried and carelessly packed, becoming brown and inert during transport. Hence green leaves always fetch higher prices than the brown.

Coto Bark.—Both the true and the "para" variety have been in moderate demand.

Digitalis has become exceedingly scarce.

Insect Powder.—The Dalmatian flowers (Flores chrysanthemi) have continued to be an object of speculation, prices being advanced soon after the harvest, from 160 florins to 230 per cwt., while even now (April) considerable quantities are brought from Dalmatia to Trieste, where they command, according to quality, from 180 to 210 florins.* The demand for the U. S. was very brisk, and the Dalmatians have made very large profits from the extraordinarily high prices of this article during the last few years. Caucasian flowers (Flores Pyrethri) were scarce throughout the past year.

Jaborandi.—The brown color which in coca leaves indicates inferiority, denotes here the very opposite property. The genuine leaves derived from *Pilocarpus pinnatifolius* Lem., nat. fam. Rutaceæ, exported from Pernambuco and Para, and rich in pilocarpine, are preferred, if of a brownish color and even with the stems attached, to the finely green, stemless leaves which are exported from the province of Matto Grosso in Southern Brazil. Regarding the latter, it is yet doubtful whether they contain any pilocarpine, and whether they are derived from the false jaborandi (fr. *Serronia Jaborandi* Gaudichaud, nat. fam. Piperaceæ), or from another genus of Rutaceæ, which seems more probable.

Quebracho.—Quebracho bark, which was first recommended as a febrifuge by Dr. Franz Penzoldt, physician-in-chief of the Medical Polyclinic and Lecturer in Erlangen, has since then been in very active demand as a remedy against *asthma*. According to reports which Gehe & Co. received from competent authorities in Buenos Ayres, it is the bark of the Quebracho blanco (*Aspidosperma Quebracho*; nat. fam. Apocynaceæ), which has been used as a febrifuge. Of this bark, however, only small specimen lots appear to have been sent to Europe; and only lately the first invoice of it was expected to be forwarded to Gehe & Co. Until now, customers had to content themselves generally with Quebracho wood, or the wood of Quebracho colorado. This is, however, derived from an entirely different source, namely, *Loxopterygium Lorentzii* Grisebach, nat. fam. Terebinthinaceæ, and has already been used for a long time by tanners on account of its high percentage (nearly 20%) of tannin. The extract as well as the tincture prepared from this were in active demand during the last few months, and is said to have rendered good service in cases of dyspnœa, while it has been found devoid of febrifuge properties. Dr. Penzoldt's observations seem to establish the fact that in many cases of dyspnœa, particularly in that which accompanies emphysema, the use of Quebracho wood is very beneficial, and it is also asserted to exert a marked benefit in bronchitis, phthisis, certain affections of the heart, and even spasmodic asthma. The medical results are said to be unaccompanied by interfering effects, such as they have been observed in Quebracho bark. Gehe & Co. have also learned that copalchi bark (fr. *Croton niveus* Jacq.), a subsitute of Cascarilla, has often been sold for genuine Quebracho bark.

* 1 florin = 45.3 cents.

Albuminate of Iron.—Prof. C. Lewis Diehl reviews, in an elaborate paper, the various processes which have been proposed for preparing the above compound. He summarizes his results as follows:

1. Albuminate of iron, in a dry condition, can be obtained with great ease by a method of precipitation with common salt.

2. So obtained, whether from solutions containing an excess of ferric chloride or an excess of albumen, it is constant in its composition as regards the relation of albumen to iron.

3. The dried and powdered product is readily dissolved by water.

4. Obtained by the method below given, it contains a certain percentage of common salt, the presence of which, however, does not interfere with its solubility, nor, it is likely, with its therapeutic application.

5. The process recommended is rapid, and conducted under conditions in which the albumen cannot be unfavorably affected by exposure to the heat of summer; and, even if exposed for a longer period than is necessary, the presence of salt is calculated to prevent the changes to which albumen or its compounds, in a moist condition, are subject.

6. The albuminate represents about 5 per cent of ferric oxide, or 10 per cent of ferric chloride.

Prof. Diehl's first experiments had shown him: 1, that albumen is not precipitated from its aqueous solution by ferric chloride; on the other hand, it prevents the precipitation of ferric oxide by alkalies; 2, that albumen is precipitated from its aqueous solution by dilute sulphuric, nitric, hydrochloric, and pyro- and meta-phosphoric acids. But by the ordinary tribasic acid or by organic acids only upon addition of chloride or sulphate of sodium, or other alkali salts.

By an empirical sort of reasoning, he was led to try whether the addition of common salt to a mixture of albumen and ferric chloride would not precipitate the albuminate of iron. The trial was a success.

Preparation: 10 troy ounces of egg-white are diluted to 20 fl. oz. with distilled water, a solution of 125 minims of liq. ferri chlor., U. S. Ph., in 10 fl. oz. of water is added, and the solution filtered. To the filtrate are added 10 fl. oz. of a saturated solution of common salt, the precipitate which is produced collected on wetted muslin, washed with a dilute solution of common salt (1 vol. of saturated solution of NaCl and 3 vols. of water), drained, powerfully expressed, and dried. The resulting product, dry albuminate of iron, amounted to a little over 12 per cent of the egg-white used, on an average.—From *Amer. Jour. Pharm.*, April.

Cedron-Seeds as Febrifuge.—The seeds of the fruit of *Simaba Cedron* Planch., belonging to the nat. fam. *Simarubaceæ*, and native of New Granada, have long been used by the natives, like other bitters, as a remedy in fevers, snake-bites. Dr. Coignard particularly relates that the natives along the west coast of Central America, and on the Atlantic coast also, use the cedron-seeds for intermittent fever, in doses of about 0.50 gm. (8 grs.), administered during the cold stage. Dr. Dujardin-Beaumetz has recently had occasion to confirm these reports. Two cases of obstinate intermittent fever, which turned out to be unamenable to quinine, yielded to cedron-seeds, given in doses of a little less than 0.50 gm. Unfortunately, however, the remedy cannot always be relied on, according to him. One seed may act violently, another may be completely inert. Hence, instead of using the seeds, it would be preferable to extract the active principle. Lewy, in 1851, had discovered a bitter principle in the seeds, which he called *cedrine*; and Tanret, according to Dr. Dujardin-Beaumetz, has lately discovered another alkaloid of very great activity, the dose of which is a milligram, and which has been named *cedronine*. Whether these two substances are identical or not remains to be ascertained. [*Cedrine* has been found to be poisonous in larger doses.]—*La Ruche Pharm.*, Jan., 1880.

Estimation of Glycerin in Wines and Similar Liquids.—HIP. RAYMOND points out that the usual determination of glycerin is particularly uncertain in plastered wine (wine treated with plaster of Paris), while in normal, pure wines it yields tolerably correct results. In the former case, the isolated glycerin is always contaminated with extractive matters and alkaline hydrates. To avoid these sources of error, the author proceeds as follows:

Evaporate the wine to one-fifth of its volume, add hydrofluosilicic acid, add afterwards an equal volume of alcohol. Filter, add baryta in slight excess, and having added quartz-sand, evaporate the whole in vacuo. Then agitate the extract with a mixture of equal volumes of alcohol and ether (for ½ pint wine at least 300 cc. of this mixture), evaporate the ether-alcohol, and place the dry residue for twenty-four hours in a dry vacuum over anhydrous phosphoric acid. After the last traces of moisture are thus removed, the glycerin is weighed. It usually leaves behind, on ignition, only a few milligrams of ash. In some cases, however, the latter is more abundant. To remove it entirely, the glycerin is poured into a boat, which is introduced into a glass tube. The latter is placed into an oil-bath, exhausted of air, and the glycerin distilled off by gradual heating to 180° C. It condenses in the cooler part of the tube. The amount of pure glycerin is found by weighing the boat, in which the glycerin was placed, both before and after distillation.—*Bull. Soc. Chim.* and *Chem. Zeit.*, No. 17.

Testing Oils.—MAUMENÉ found, says the *Textile Manufacturer*, after experimenting with all the known methods for testing oils, the one with sulphuric acid to be the best. The test is made as follows:

In a graduated cylinder, to hold 150 cubic centimetres, put 50 grams of oil. Ascertain the temperature of the same, and add with a pipette 10 cubic centimetres sulphuric acid, stir with a thermometer for a few minutes, and note the highest degree of temperature. Pure olive oil gives an increase of 42° C.

	degrees.
50 gms. pineseed oil give increase of	43
" tallow oil " "	41 to 43½
" castor oil " "	47
" horsefoot oil " "	51½
" oil of bitter almonds [fixed] give increase of	52
" oil of sweet almonds give increase of	52½
" rapeseed oil " "	58
" earth-nut oil " "	67
" sesame oil " "	68
" hemp oil " "	98
" nut oil " "	101
" liver oil (raja) " "	102
" cod (G. Morrhua) give an increase of	102
" linseed oil " "	103

—*Chem. and Drugg.*

Preservation of Plants.—According to Josef de Monti, natural flowers or plants may be preserved for a long time by putting them into moist sand. It is necessary to select white river sand which must be sifted several times, and thoroughly washed and triturated with water. The water is then poured off. The plants are preserved fresh as long as there is any moisture in the sand.

Dr. Miergues proposes the following method: Take hold of the plant at the end of the stem, draw it through paraffin kept melted on a water-bath, shake it about to throw off the excess of paraffin, and place it on a flat surface, separating and arranging the different parts as they are intended to remain. Then put the plant under glass. —*Czasopismo Towarz. Aptékar.* (Lwów).

California Bay-Tree Oil.—(J. M. STILLMANN.) The author reports on the properties of an essential oil, prepared by distilling the leaves of the California Bay-Tree or *Oreodaphne californica* (= *Laurus californica*, *Tetranthera* or *Umbellaria californica*). The tree is large, handsome, and evergreen, being very commonly found in the valleys of the mountain-ranges on the Californian coast. Its wood, the so-called California laurel, is much used in the manufacture of fine furniture. The leaves contain an essential oil, which has a penetrating odor, and, if inhaled too profusely, incites tears. About 35 kilos of the leaves, distilled with steam, yielded 800 grams of the oil. This is light-yellow, thin-liquid, and limpid, does not thicken on standing, and has an agreeable and aromatic odor, unless it is inhaled too largely. The spec. grav. at 11° C. was 0.94. The oil contains two principal constituents: one, boiling at 167–168° C., being very likely identical with *terpinol*; the other boiling at 215–216°, being as colorless and mobile as water, and possessing an agreeable color. If the latter is inhaled too much, it excites a most copious flow of tears, and produces headache. The author names this substance *umbellol*.—*Ber. d. Deutsch. Chem. Ges.*

New and Sensitive Method of Detecting free Hydrochloric Acid in Solution of Ferric Chloride.—(PROF. NICOLA REASE.) The author finds that a solution of ordinary phenol treated with ferric chloride takes an amethyst coloration, turning to a brown. But if a drop of hydrochloric acid is added to the solution, the liquid either assumes no coloration at all, or assumes a greenish tint.

He proceeds as follows:—1 gm. of the crystalline phenol of commence is heated in 100 cc. of pure water. He then pours 1 cc. of the liquid ferric chloride into 50 cc. of pure water. This solution being in a small test-beaker set on a sheet of white paper, the solution of phenol is added drop by drop. The first drop, if the solution is slightly acid, produces a fugitive coloration, but if it is strongly acid no color appears. On continuing to add the phenol solution the color becomes permanent and gradually darkens. From the volume of the phenol solution consumed an approximate idea of the quantity of acid present may be formed.—*L'Orosi.*

Wattle Bark; its Medicinal Uses.—An infusion of a drachm of the bark in two-thirds of a breakfast cupful of boiling water, infused one or two hours, given in doses of a teaspoonful every half-hour, is a valuable remedy in infantile diarrhœa, two or three doses affording relief. In dysentery its value is not so marked. In "sore eyes," catarrhal ophthalmia, it is a favorite and successful country remedy.

Two drachms of the tincture mixed with an ounce of glycerin is a useful application in discharge from the ears, for chapped lips, sore nipples, and slight fissures of various kinds. This forms a good substitute for glycerin and tannic acid. The bark yields a good gargle for relaxed throat.

Wattle bark is derived from *Acacia pycnantha* Benth., nat. of Australia. The gum is used internally for piles, and in veterinary or farriers' practice for wounds and raw shoulders. [From a paper read by DR. S. J. MARGERY before the Adelaide Philos. Soc.]—*Chem. and Drugg.*

Test for the Purity of Oil of Sesame.—Oil of sesame, which is frequently used for the adulteration of olive oil, is itself often adulterated with cheaper oils, such as cotton-seed, poppy, or mustard oil. The latter may be detected as follows:

Into a test-tube put 10 cc. of the oil of sesame, add carefully 4 drops of sulphuric acid, shake briskly for a few minutes, then add 4 drops of nitric acid, and shake again. If the oil is pure, it will acquire a deep-green tint, which rapidly passes into a currant-red; if it is adulterated by any of the above oils, no such coloration will make its appearance.—*Journ. de Pharm. d'Anvers*, Feb.

Opposite Polarization of Malic Acid in Dilute and Concentrated Solutions.—G. H. SCHNEIDER has found that, on gradually making dilute solutions of malic acid, which turn the plane of the polarized light to the left, more and more concentrated, the specific rotation diminishes, until there is present about 34 per cent of acid, when the rotation disappears entirely, and on further increase of the concentration passes over to the right. Possibly there may be other substances exhibiting the same properties.—*Ber. d. Deutsch. Chem. Ges.*, 13, 620.

Rhinacanthus communis: A Remedy for Ringworm and Other Skin-Diseases.—Dr. P. Liborius states that, while in Hong Kong, he became acquainted with a drug which consisted of the root-fibres of a plant growing in Siam, and exported from Bangkok to Hong Kong. It is used in form of tincture, which goes there by the name of "ring-worm tincture." Afterwards he learned from Dr. Gerlach, a practising physician and botanist, living in Hong Kong, that the root was derived from *Rhinacanthus communis* Nees van Esenb. A small quantity of this drug was examined at the pharmaceutical institute of the University of Dorpat, under Prof. Dragendorff, and among a number of other usual constituents, there was found in the plant a peculiar substance, named by the author *rhinacanthin*, which constitutes, at ordinary temperature, a tough, resinous, dark, cherry-red mass, the color of which is altered to greenish-yellow by acids, but restored to red by alkalies. It appears to be related to chrysophanic acid; and it also seems to have similar therapeutical properties. The root is sold at Hong Kong at $2.00 per lb. [It is known in China as Tong-Pang-Chong; compare New Remedies, 1879, 49.]—From *Untersuchungen über d. Wurzelfasern von Rhinacanthus communis von Dr. P. Liborius. Dorpat*, 1880.

Assay of Iodine in Syrup of Iodide of Iron.—The same author also made use of the previously described reaction between chlorates and iodides, for the quantitative estimation of the syrup of iodide of iron. The syrup is first diluted with 3 parts of water; 20 cc. of this diluted syrup are then put into a plain glass retort containing 2 grams of potassium chlorate. The neck of the retort should pass quite to the bottom of a flask containing about 2 gm. of potassium iodide, and enough water to cover the end of the retort. The flask itself must be immersed in a jar of cold water.* Distil until nearly all of the iodine has passed over, change the flask and water surrounding it, and continue the process until the distillate passes colorless. Mix the distillates and then titrate with thiosulphate (hyposulphite) of sodium.—*Pharm. Journ.*, April 24th.

Valuation of Soda-Ash.—(Edward Jackson.) The formulæ given below will show in what proportion to mix a strong and a weak ash, so as to obtain one of a given intermediate strength. Let a, b, and c = percentage of alkali, in strong, weak, and intermediate ash, respectively; W = weight required of strong ash; and w = weight required of weak ash: Then,

$$W = \frac{c-b}{a-b} \text{ and } w = \frac{a-c}{a-b}$$

An example will make this clear: Suppose it is desired to find what weight of strong ash at 52 per cent, when mixed with ash at 12 per cent, will be required to make a ton of ash at 34 per cent. Then

$$W = \frac{c-b}{a-b} = \frac{34-12}{52-12} = \frac{22}{40} = \frac{11}{20}$$

Therefore 11 cwts. at 52 per cent and 9 cwts. at 12 per cent will produce 1 ton of 34 per cent ash.

New Vehicle for External Application.—(P. Ceresoli, of Padua.) Fatty substances obstruct transpiration by stopping the pores of the skin. A solution of animal soap in alcohol of 95 per cent serves well for frictions of potassium iodide, chloroform, belladonna extract, laudanum, etc. A solution of 116 parts of soap in 800 parts alcohol should be kept for dispensing with tinctures. 120 parts of iodide potassium may be dissolved in 800 parts alcohol and 90 parts of soap added.—*Rép. de Pharm.—Chem. and Drugg.*

Atomic Weight of Antimony.—Prof. Jos. P. Cooke, of Harvard, finds, from a long continued series of very carefully conducted experiments, that the atomic weight of antimony is 120, and not 122 as supposed at present.—*Chem. News*, 1880, April 30th.

* Compare the article on "Modification of Duflos' method for the Estimation of Iodine," in this journal, 1876, p. 107.

BIBLIOGRAPHY.

Photographic Illustrations of Skin Diseases. By George Henry Fox, A.M., M.D. New York: E. B. Treat, 805 Broadway. 4to. $2.00 per part.

We have already received parts vii. to x. of this serial, containing the following plates and text: Lupus vulgaris, Lupus erythematosus, Epithelioma superficialis, Epithelioma rodens, Epithelioma. Tricophytosis capitis, Tricophytosis corporis, Lichen planus (2 plates), Lichen ruber. Kerion, Lepra maculosa, Moluscum (2 plates), Erythema multiforme. Phtheiriasis capitis, Phtheiriasis corporis, Scabies (2 plates), Porrigo e pediculosis.

Two parts more remain to be issued, and the whole will form a very valuable guide to the study of skin affections, and almost the first of any note in which the photographic process had been applied with any degree of success.

Tarif der k. k. chemisch-physiologischen Versuchs-Station für Wein- und Obstbau zu Klosterneuburg bei Wien. 2te Auflage. 8vo, Wien, 1880.

(Schedule of Prices of Analyses made by the Imperial Chemical and Physiological Institute of Œnology and Pomology at Klosterneuburg, near Vienna.

The analyses conducted at this well-known institution comprise not only all those subjects which are usually examined in other laboratories, but they also extend to the special subjects directly or indirectly connected with the growing of wine, fruit, or grain, and the different products obtained from them. The prices are very reasonable, and will be communicated to any one who may apply for them.

Chemiker-Zeitung. Central Organ für Chemiker, Apotheker, Techniker, Ingenieure, Fabrikanten. Chemisches Central-Annoncenblatt. Mit der Beilage "Handelsblatt der Chemiker Zeitung." 4vo, Cöthen, Germany. *Weekly.* Per year, 20 marks.

Among the European chemical journals, the above is one of the best edited and most widely circulated. It gives abstracts of all important recent publications, patents, and discoveries, often accompanied by illustrations; resumés of the progress of chemistry in various branches, written by competent authorities, original articles, a detailed and valuable commercial report, and has a large advertising patronage, which is a good mirror of the life of chemical industry on the Continent. The editor is Dr. G. Krause, who has already received recognition of his valuable services by the award of several industrial medals of merit. The journal is eminently practical and deserves to be in the hands of all chemists who have a command of the German language.

Microphotographic Transparencies of Sections of Officinal Drugs and other Articles of Materia Medica. Size 4 by 4. Rate of enlargement from 9 to 20 diameters.

Prof. O. A. Wall, Ph.G., M.D., of the Missouri Medical College and St. Louis College of Pharmacy, has prepared, primarily for his own use, a series of microphotographic transparencies for illustrating lectures on Materia Medica, by means of the lantern. These transparencies are carefully covered, bound and accurately labelled, the rate of enlargement being stated on the label. But as this statement conveys no meaning when the slide is projected on the screen, a scale representing a line $\frac{1}{10}$ of an inch long, divided into hundredths of an inch, is photographed on the transparency. These slides, which will gradually be made to embrace all the officinal and the more important non-officinal plants or drugs, can be supplied at the rate of about $40.00 per 100, which is remarkably cheap considering the excellent quality of the work.

A list of the negatives will be sent to any one desiring it, on applying to Prof. Wall.

Στοιχεῖα Βοτανικῆς · ὑπὸ Εὐσταθίου Πονηροπούλου, καθηγήτου τῆς Βοτανικῆς κ. τ. λ. Ἐν Ἀθήναις 8. 1880, pp. ιε΄; 432.

[Principles of Botany. By Eustathios Poniropoulos, Professor of Botany, etc. Athens. 8vo, 1880, pp. xv., 432.]

THE author has undoubtedly rendered a good service to his country by the publication of this excellent text-book, which takes into account the modern discoveries and researches on the field of botany. The illustrations are much better than we have been accustomed to see them in works published in the European Levant. In *one* point the author might have done better, namely, in adding the name of the author to systematic plant-names. The author's name is an indispensable characteristic and should *never* be omitted. Particular attention has been paid to botanical physiology and chemistry, and this portion is accompanied by a number of well executed and interesting illustrations.

A SYSTEM OF MEDICINE. Edited by J. RUSSEL REYNOLDS, A.M., M.D. With numerous Additions and Illustrations by Henry Hartshorne, A.M., M.D. In 3 vols. Philadelphia: Henry C. Lea's Son & Co.; 1880. In 3 volumes, 8vo, $15.00. By subscription.

VOLUME III., completing this series, is at hand. It comprises 990 pages devoted to the diseases of the Digestive, Blood-glandular, Urinary, Reproductive, and Cutaneous Systems. The American editor has supplied chapters on Diarrhœa, Cholera Morbus, Cholera Infantum, Trichina Spiralis, Bronchocele, Progressive Pernicious Anæmia, and Spermatorrhœa, as well as numerous notes scattered throughout the text, which help to bring the information nearer to date. This volume also contains a general index to the series, in addition to the one completing each volume.

Good use has been made of some of the illustrations in the "Medical and Surgical History of the War of the Rebellion," in speaking of intestinal lesions, of Emmet's illustration of ovarian cystic disease, etc.

As we have before intimated, this series, as re-edited, will doubtless prove very acceptable to a large number of medical practitioners in this country, whose means and needs did not warrant the possession of its English predecessor.

THE PRACTITIONER'S REFERENCE BOOK. By RICHARD J. DUNGLISON, A.M., M.D., etc. Second Edition, Revised and Enlarged. Philadelphia: Lindsay & Blakiston, 1880, 8vo, pp. 476. $3.50.

IN this second edition the author has introduced numerous items appropriate to the character of the work. In it will be found a great variety of facts, such as every practitioner is in need of, at one time or another, and for which he might otherwise be obliged to search through many books and journals.

Among the recent additions are directions for writing metric prescriptions, directions for using the hypodermic syringe, for using a galvanic battery, for applying trusses, for using a thermometer, rules of medical etiquette—all matters that are generally supposed to be familiar to all physicians, but which, unfortunately, are too little known. Tables for aiding diagnosis in certain classes of affections are also inserted, as well as a list of remedies which at one time or another have been popular.

WATER ANALYSIS FOR SANITARY PURPOSES; With Hints for the Interpretation of Results. By E. FRANKLAND, Ph.D., D.C.L., F.R.S., etc. Philadelphia: Presley Blakiston. 1880. Sm. 8vo, pp. 149.

THE author's reputation in this branch of analytical chemistry is already too well established to require comment. The present work has over 100 pages devoted to the various modes of water-analysis requiring gas apparatus, followed by a voluminous appendix in which the following topics are considered: Reagents in water analysis; Tables; Conversion of parts per 1000 into grains per gallon, or the reverse; Typical analysis of various waters; Average composition of unpolluted waters; Conclusions and recommendations of the Rivers Pollution Commissioners, and standards of purity required by the Rivers Pollution Commissioners. A good index to complete the volume is something so unusual in small monographs of this sort that its presence deserves especial notice.

WOOD'S LIBRARY OF STANDARD MEDICAL AUTHORS.

I.—THE VENEREAL DISEASES. INCLUDING STRICTURE OF THE MALE URETHRA. By E. L. KEYES, A.M., M.D. 8vo, pp. 348.

II., III.—A TREATISE ON FOREIGN BODIES IN SURGICAL PRACTICE. By ALFRED POULET, M.D. 2 vols., 8vo, pp. 271, 320.

IV.—TREATISE ON THERAPEUTICS. By A. TROUSSEAU and H. PIDOUX. Translated from the Ninth French edition by D. F. LINCOLN, M.D. Vol. I., pp. 302. (Other volumes to follow.)

V.—HAND BOOK OF PHYSICAL DIAGNOSIS. Comprising the Throat, Thorax, and Abdomen. By DR. PAUL GUTTMANN. Translated from the third German edition by ALEX. NAPIER, M.D., of Glasgow. With a Colored Plate and 89 Wood Engravings. 8vo, pp. 344.

FIVE volumes of the series for 1880 have already come to hand, and in many respects they are superior to the set that preceded them. A notable feature is the proportion of original works which the series for this year is to embrace. One might almost count among them the translation of the monumental work by Trousseau and Pidoux, which heretofore, though often quoted, has been accessible only in the French.

Dr. Keyes' work seems to be not only an excellent exponent of the present state of our knowledge repecting the class of affections of which he writes, but it contains a large amount of valuable and practical information drawn from his very extensive and reliable experience.

Poulet's work on "Foreign Bodies in Surgical Practice" is the first connected treatise that has been published on this very important subject. Detached articles are to be found scattered through surgical literature, exhibiting great ingenuity and readiness of resources on the part of those who have from time to time had occasion to treat cases in which the presence of foreign bodies has been the cause of disturbance, but until now the meagre details of general treatises on surgical practice have been the only available sources of information, without much labor and time spent in research. Volume I. relates to foreign bodies in general; foreign bodies in the intestinal tract; in the pharynx and œsophagus; in the stomach; in the intestine, and in the rectum. Volume II. is devoted to foreign bodies in the air-passages; in the genito-urinary organs (a large section); in the ear; in the nasal fossæ; and in the glandular canals. The text is well illustrated and numerous cases are cited in sufficient detail.

The first volume of Trousseau's and Pidoux' work on Therapeutics relates to reconstituent remedies, astringents, alteratives, and irritants, and among the remedies referred to will be found some which have been but little resorted to by physicians in this country; but which, to judge from the mass of experience in their favor that has been accumulated on the other side of the water, are well entitled to more attention, *e. g.*, gold, platinum, baryta, thapsia, silicate of sodium, etc.

Guttmann's "Physical Diagnosis" is but a fragmentary treatise on this important branch of medical science, but covers those topics which are of greatest interest to the general practitioner. It has already met with much favor abroad, and will doubtless be equally well appreciated here. Advantage has been taken of the very extensive collections of woodcuts to be found in this city to illustrate the instruments employed for the diagnosis of disease and to illustrate the various regions of the thorax and abdomen.

The binding of the series is superior even to that of 1879, and the volumes contain uniformly a greater number of pages, so that, considered with the other advantages which the series possesses, it still remains, although raised in price from $12.00 to $15.00 per year, the cheapest and most valuable set of medical publications yet offered to the profession.

PRESLY BLAKISTON, of Philadelphia, has of late made something of a specialty of popular works on hygienic subjects. Those which are latest received are the following:

SEA AIR AND SEA BATHING. By JOHN H. PACKARD, M.D., pp. 124.

THIS belongs to the series of American Health Primers, and is of especial interest at this time of the year. Its chapters are as follows: Introduction. General Considerations as to Sea-Side Resorts. Bathing in the Sea. Accidents in Bathing. Sea Bathing for Invalids. Amusements at the Sea-shore. Cottage Life at the Sea-shore. Sanitary Matters. The Sea-shore as a Winter Resort. Excursions to the Sea-shore.

The little book is full of practical suggestions that have evidently been gleaned from the personal experience of its author, and we can well hope that it might be read by every one who expects to spend any time at the sea-side.

THE MANAGEMENT OF CHILDREN IN SICKNESS AND IN HEALTH. A Book for Mothers. By ANNIE M. HALE, M.D. Sm. 8vo, pp. 110.

A VERY practical and (therefore) sensible little book. The writer appears to have had some experience in the care of infants and avoids to a great extent the mistake of many writers on this subject, of following blindly in the track of those who have written on the subject before her —each one copying his predecessor. We find nothing in the book calling for criticism, but very much to commend.

HEALTH AND HEALTHY HOMES: By GEORGE WILSON, M.A., M.D., etc. With Notes and Additions by J. G. RICHARDSON, M.D. 8vo, pp. 314.

THE contents is very various in the number of subjects to which reference is made. They may be summed up, however, as follows: Introduction. The Human Body. Causes of Disease. Food and Diet. Cleanliness and Clothing. Exercise, Recreation, and Training. The Home and its Surroundings. Infectious Diseases and their Prevention.

The opportunities possessed by the author for becoming familiar with the subject on which he writes have been exceptionally good, and the style in which he says it adds to the interest of a subject which is already absorbing much attention among the public as well as in the medical profession. The work is evidently intended for popular reading, but it none the less is fitted for the instruction of those who belong to another class. The chapter on Infectious Diseases and their Prevention is exceptionally valuable, and will probably have the greatest interest for the general reader, although it by no means embraces all that it will be worth his pains to study carefully. Prof. Richardson has contributed whatever has been necessary to adapt the work to the conditions of life in this country.

THE PHARMACOPŒIA OF THE BRITISH HOSPITAL FOR DISEASES OF THE SKIN. London. Edited by BALMANNO SQUIRE, M.B. Lond. Second Edition. London: J. & A. Churchill, 1880. Sm. 8vo, pp. 92.

THE author has kindly favored us with a copy of this valuable little pharmacopœia, the first edition of which was not long since issued. To lessen the labor of memorizing the completed products have been reduced as near as possible to one ounce. None of the formulas at present to be found in the Ph. Br. are included, so that it serves, to a certain extent, as a supplement to that larger work. We are glad to see that the book meets with the favorable reception which it well merits.

TENTH ANNUAL ANNOUNCEMENT of the Louisville College of Pharmacy. Session 1880-81. 8vo, Louisville, 1880.

ANNUAL ANNOUNCEMENT of the School of Pharmacy of the University of Michigan for the thirteenth year (1880-81).

CHEKEN IN WINTER COUGH. By WM. MURRELL, M.D., etc. Reprinted from *The Practitioner*. 8vo, pp. 5.

NEW BOOKS.

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Monatshefte für Chemie und verwandte Theile anderer Wissenschaften. Gesammelte Abhandlungen aus den Sitzungsberichten d. Kais. Akademie d. Wissensch. 8vo, Wien (Monthly), per year, $3.72.

Vogl (Dr. A.). Arzneikörper aus den drei Naturreichen in pharmakognostischer Hinsicht. 164 ill. 8vo, Wien, 536 pp. $4.40.

Ruempler (Th.). Illustrirtes Gartenbau-Lexikon. 8vo, Berlin. To be published in about 30 numbers. Each $0.40.

Moeller (Dr. J.). Die Pflanzen-Rohstoffe. 37 illust. 8vo, Wien, pp. 110. $1.20.

Jarmain (George). Systematic Course of Qualitative Analysis, Arranged in Tables. 4th ed. 8vo, London, 1*s*. 6*d*.

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CORRESPONDENCE.

THE PHARMACOPŒIA OF THE U. S. OF A. FOR 1880.

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It is proposed in this paper to discuss the Revision of the Pharmacopœia from the standpoint of the physician. From this aspect, the Pharmacopœia may be divided into three sections:

1. Embracing those matters in which *physicians* are most interested, and which it is their province principally to direct, such as what drugs shall go into the Pharmacopœia; and the doses, or in other words, the strength of preparations.

2. That portion in which pharmacists are most interested, and which should be mainly left to them. As, for instance, the construction of formulæ and directions for their manipulation.

3. The intermediate ground on which both physicians and pharmacists meet with equal interest, as in the questions of introducing matters of therapeutics and toxicology and in the use of parts by weight, instead of the old standards of troy and apothecaries' weights and liquid measures. All those subjects which pertain to pharmacy alone I will pass over, leaving them to the pharmacists.

As to introducing into the Pharmacopœia information in regard to doses, therapeutics, and toxicology, the Convention instructed the committee adversely.

One of the most important questions decided by the Convention, and one which gave rise to the most animated discussion, was on the adoption of parts by weight in the formulæ. The adoption of parts by weight in the centesimal ratio is a decided step forward in the direction of scientific advancement, and will be of great service to the physician in giving him, at a glance, the strength of any preparation.

If the total number of parts in a formula be 100, the number of parts of each ingredient is the percentage of that ingredient. The percentage therefore of the active agent is indicated at a glance.

Under the old arrangement of formulæ, where no definite amount is required in the completed preparations, and where several units, as grains, drachms, ounces, and pints, are used, a calculation by arithmetic is necessary to arrive at the required proportion of strength. The physician is compelled either to memorize the strength or to make such calculation each time such knowledge is required. The adoption of parts by weight in the per cent ratio is also a triumph for the metric system, which does not perhaps appear at first sight.

It requires a single unit of weight. What so convenient and desirable as the gram?

It calls for a centesimal or decimal system. Where can this be found but in the metric system?

Of those matters in which physicians have most interest and which it is specially their province to direct, the most important are: What preparations shall be made official? and What shall be the strength of preparations? The discussion of these two propositions is the main object of this paper.

It is not proposed to discuss this or that drug individually, so much as to treat of general principles which should serve as a guide, and endeavor to establish the propriety of adopting as far as possible a uniform classification.

In regard to the first proposition, what preparations shall be made official?

It should be laid down as a general rule that "*no formulæ should be made official which can just as well be ordered by the physician on extemporaneous prescription, and which must be compounded at the time by the pharmacist.*

The Pharmacopœia is not a book of *prescriptions*, nor is it intended to supply the place of a *formulary*. It is not supposed to save physicians the trouble of writing prescriptions.

It is a recognized principle of prescribing that the prescription should be adapted to the requirement of the case, and nothing is more unscientific or more to be deprecated than routine prescribing. It is undoubtedly to the advantage both of physician and patient that the recipe should be thought out, and its strength gauged to the needs of the case in hand. On this principle many preparations, at present official, should be dropped and left to *ex-tempore* prescription. The majority of such preparations are to be found among the suppositories, solutions, ointments, decoctions, and infusions.

Let us, by way of illustration, look at the suppositories. These are nine in number:

Suppos. Acidi Carbolici.	Carbol. a., gr. 1. Cacao butter, ad gr. 30.
Suppos. Acidi Tannici..	Tannin, gr. 5. Cacao butter, ad gr. 30.
Suppos. Aloes.....	Aloes, gr. v. Cacao butter, ad gr. 30.
Suppos. Asafœt	Tr. asafœt., 3 ¾. Cacao butter, ad gr. 30.
Supp. Belladonnæ	Ext. bellad., gr. ½. Cacao butter, ad gr. 30.
Suppos. Morphiæ.....	Morph. sul., gr. ss. Cacao butter, ad gr. 30.
Suppos. Opii..	Opium ext., gr. 1. Cacao butter, gr. 30.
Suppos. Plumbi.....	Acet. lead, gr. 3. Cacao butter, gr. 30.
Suppos. Opii et Plumbi.	Acet. lead, gr. 3. Opium ext., gr. ½. Cacao butter, gr. 30.

Here are nine totally unnecessary preparations. They are all simple prescriptions of only two or three ingredients requiring no special directions. The convenience of having them on hand even cannot be pleaded, for they are perishable preparations that must be compounded just as ordered. These are negative objections. A positive objection may be urged against some of them, as in the case of suppos. morphiæ. The dose of morphia in each is 0.03 (gr. ½), and in the instance of delicate females might readily produce dangerous symptoms. Besides all this, the official suppositories are not used by the profession. I have been informed by the druggist doing the largest prescription business in Washington, D. C., that he has never put up a recipe for an official suppository.

In speaking of the subject with a prominent physician who is a college professor and a hospital physician, he said he never knew that suppositories were official before. I dwell upon this point to show the absurdity of placing such preparations in the Pharmacopœia. It burdens the mind of the student with useless rubbish, for he feels compelled to learn their proportions. After graduation he never thinks of them again, or, if he uses them, is quite as likely to overdose his patient as not.

In the same category we would class

Liq. Morph. Sul.	Morph. s., gr. i. Water, f. ℥ i.

There is no necessity of encumbering the Pharmacopœia with any such preparation, besides there are two other distinct objections to this solution, one of which is that there are two other solutions of morphia in common use in some parts of the country, one of which (Magendie's, gr. 2 to f. ʒ i) is more frequently used than the official. Fatal mistakes have occurred from the confusion. It is authentically reported of Prof. Bache, who introduced liq. morph. sul. into the Pharmacopœia, shortly afterwards being in New York City, ordered for himself a prescription of this solution, and the pharmacist compounded Magendie's solution. Dr. Bache took a teaspoonful of the solution and nearly lost his life in consequence. The other positive objection is that no solution of an alkaloid will keep unchanged. It is decomposed by the development in it of bacteria.

These same objections apply to the solutions of *atropia*

and *aconitia*, which it is proposed to introduce into the Pharmacopœia of 1880. Such powerful drugs had better be prescribed as required and of the strength desired.

There are many other preparations included in the present list which come under the same category, but I think enough has been said to illustrate my meaning and prove the correctness of the position taken, that *simple prescriptions* should not be made official.

The second question which we propose to discuss—is as to the *strength* of preparations.

This is the most important matter in which physicians are alone interested—in which they justly claim the right to direct. It is the question of doses—to my mind, a topic of far greater importance than is generally supposed. We have become accustomed to the present heterogeneous and utterly unsystematic arrangement of formulæ in this regard, and are inclined to accept them as established facts—which it would be very inconvenient, and perhaps dangerous, to alter. *Inconvenient* because it would necessitate on the part of the physician, to a large extent, the learning of doses over again; and possibly *dangerous* from the occurrence of mistakes. Upon closer inspections these drawbacks disappear.

There should, most certainly, be some attempt made, in the present edition of the Pharmacopœia, to render the strength of preparations more uniform, to base it as far as possible upon some established rule. This is already the case in a large and increasingly useful class of preparations—the *Fluid Extracts*. One needs not to ask the strength of a fluid extract, whether it be official or unofficial.

We know that it represents weight for weight of the drug from which it is made. No act of memorizing is here necessary after the dose of the crude drug is once learned.

What good reason is there why a similar law of uniformity should not be applied to other liquid preparations, as tinctures, wines, and vinegars? I say there is no good reason except the inconvenience of changing doses; and the great advantage to be gained far outbalances this. The wonder is indeed that they were not so made uniform in the first place, instead of leaving the strength arbitrary. There seems to have been an effort in the directions of making the tinctures uniform as to dose, at a teaspoonful, but the number of exceptions are so great (19 out of 58) as to almost entirely defeat the usefulness of such an arrangement.

Uniformity of doses has been suggested, and would undoubtedly be a great improvement on the present *no-system*, but uniformity of strength is more scientific, and more desirable as referring constantly in a definite ratio to the original drug. To make the *dose* the standard is to give an individuality to the preparation which is not advisable; the individuality should rest only in the drug itself.

The desirability of uniformity is recognized to a limited degree in the instructions to the Committee on Revision adopted in the late Convention, in the following paragraph:

"All such tinctures, wines, etc., in which a slight variation of dose is of no importance, are to be made as nearly as possible of a uniform percentage strength; that is, *one* part of the drug is to be made into *five* parts of tincture, or into *ten* parts of tincture, as the case may be." This is in effect the suggestion made by Mr. Rice in his Report, but does not, in my opinion, go far enough.

None doubt the propriety and convenience of making fluid extracts uniform in strength, and the same reasons apply to other liquid preparations with equal force. The only difference is, that a distinct and arbitrary strength has already been adopted, and a new standard would involve the inconvenience of change.

The most important objections to the present arrangement of the Pharmacopœia, from the physician's standpoint, are want of system, and the difficulty of carrying in the mind the strength of preparations. This is most noticeable to the student of medicine, who is appalled by the long list of arbitrary doses he is forced to learn.

To the student, in consequence, *materia medica* is the bugbear of the curriculum, and much valuable time is lost in pure memorizing that had better be given to the principles of therapeutics. It is undoubtedly a great waste of mental energy to learn and carry in the memory through life such an array of disconnected facts, when, by proper systematizing, it would be rendered unnecessary. There is so much more to learn in every department of medical science than there was twenty or thirty years ago that we cannot afford to waste time in useless mental labor.

It has been urged as a reproach upon materia medica and therapeutics that it has not kept pace with the advancement of other branches of medicine. Not unlikely the prejudices which we imbibe as students may exert an unseen influence to bring about this result.

I propose now to consider the principal classes of *liquid* preparations in detail, and show that they could be made of uniform strength of *ten per cent*, without detriment to their usefulness, and with very little inconvenience to the prescriber.

The preparations I shall take up are the *dilute mineral acids*, *vinegars*, *wines*, and *tinctures*.

1st. The *dilute mineral acids*.

The following table gives their strength according to the present Pharmacopœia:

Dilute acetic acid	12½	per cent
" hydrochloric acid	25	"
" nitric acid	22	"
" nitro-muriatic acid	20	"
" phosphoric acid	7.39	"
" sulphuric acid	12½	"

Only two have the same strength, yet no reason can be assigned for having made them thus irregular. It seems to have been the result of pure hap-hazard.

There are but six of these official dilute acids; but I venture to say that very few physicians in general practice can give their proportions correctly. I have tried the experiment with quite a number, and they have invariably declined to attempt it, but answer that they can give the doses. It is true that physicians know the doses of the dilute acids, but they know them independently of the strong acid, and this is just the point raised; that the doses of *both* must be memorized, when, if the rule of 10 per cent were to prevail, it would only be necessary to know the dose of the strong acid. An examination of the list will show that this change to a uniform proportion of 10 per cent can be made without detriment to usefulness. Since the activity of all except one is diminished, there can be no danger of *over* dosing from the change.

The strength of dil. phosphoric acid would be increased from 7.39 to 10 per cent; an increase which could give rise to no serious result, even though administered in the original dose.

Dilute hydrocyanic acid is not included in this list, and should be left unaltered as an exception of the rule.

2*d*. The *Vinegars*.

The following is their present percentage of strength.

Vinegar of lobelia	12½	per cent
" " sanguinaria	12½	"
" " squill	12½	"
" " opium	14	"

It is doubtful whether vinegar possesses any advantage over alcohol as a menstruum, and whether the vinegars might not with propriety be dropped altogether, but as they are used by a great many physicians—if they are made of uniform strength, at 10 per cent, there is no objection to their retention.

The three first mentioned are now 12½ per cent. A change to 10 per cent would be free from objection, a difference of 2½ per cent being immaterial.

With black drop (acetum opii) there would be a reduction of 4 per cent, a change on the side of safety.

Mr. Rice, with great propriety, suggests that all the liquid preparations of opium—except paregoric—be made 10 per cent strength.

We have now six liquid preparations of opium of varying proportions.

Vinegar of opium	14	per cent
Tinct. "	7.8	"
" " acetated	10	"
" " deodor	7.8	"
" " camphor	1 to 256	
Wine of opium	12½	per cent

This list alone is sufficient to illustrate the absurdity of the present arbitrary formulæ.

3*d*. The *Wines*. The following are at present official.

Wine of aloes	6	per cent
" colchicum root	40	"
" " seed	12	"
" ergot	12	"
" ipecac	6¼	"
" opium	12½	"
" rhubarb	12½	"
" tobacco	6¼	"
" antimony	1 to 240	

The strength of wine of aloes and wine of ipecac would be increased with advantage.

Wine of colchicum root would be decreased to one-fourth, making a teaspoonful an average dose. Wine of colchic. seed and wine of tobacco should be dropped as useless preparations.

Wine of antimony should be left unchanged as an exception to the 10 per cent rule. Thus all the official wines except the last-mentioned could readily be made of a uniform strength.

4. The *Tinctures*.

This is by far the most important class of the liquid preparations, and I have reserved their consideration for the last. They number fifty-seven in the Pharmacopœia of 1870; in the Pharmacopœia of 1880, the new additions will probably run their number up to eighty. The strength, as already stated, is arbitrary, ranging from one part to 256 (paregoric) to 50 per cent (tr. verat. virid.). The larger majority are in the neighborhood of 10, 14, or 20 per cent.

An examination will show that the strength of all these might very advantageously be made 10 per cent, except the camph. tinct. of opium; and this should be transferred to the *elixirs*. It is a matter of surprise that some such uniformity was not adopted at the outset.

Twenty-three tinctures have a present an approximate strength of 10 per cent.

Tinct. Aloes and Myrrh.	Tinct. Kino.
" Aurantii.	" Opii.
" Benzoini Co.	" " Deod.
" Calumbæ.	" " Acet.
" Cardamom. Co.	" Quassiæ.
" Chirettæ.	" Rhei and Cardam.
" Cinchon. Co.	" Rhei. Arom.
" Cinnam.	" Serpentariæ.
" Cocci.	" Stramonii.
" Croci.	" Tolu.
" Gentian. Co.	" Vanillæ.
" Iodinii.	

The above would remain unaltered. *Eleven* have at present a strength of 14 per cent.

Tinct. Belladonnæ.	Tinct. Digitalis.
" Cardamom.	" Hellebori.
" Colchici.	" Hyoscyami.
" Conii	" Sanguinariæ.
" " Fruct.	" Scillæ.
" Cubebæ.	(In all 11.)

The following have a strength of about 20 per cent:

Tinct. Arnicæ.	Tinct. Jalapæ.
" Asafœtidæ.	" Krameriæ.
" Benzoin.	" Lupulin.
" Buchu.	" Lobeliæ.
" Cannabis.	" Myrrhæ.
" Cimicifugæ.	" Nucis vom.
" Cinchonæ.	" Valerian.
" Gallæ.	" " Ammon.
" Guaiac.	" Zingiber.
" " Ammon.	(In all 20.)
" Humuli.	

Tinctures weaker than 10 per cent:

Tinct. Cantharidis	4	per cent
" Capsici	4	"
" Opii Camph	1 to 256	

Tinctures stronger than 20 per cent:

Tinct. Aconiti radicis	40	per cent
" Verat. viridi	50	"

Thus twenty-three (23) tinctures would be unaffected by the change.

Eleven (11) would be reduced from 14 to 10 per cent, which would in no way interfere with their usefulness.

Twenty (20) would be reduced from 20 to 10 per cent, thus reducing their strength just one-half.

An examination of the list just read will show that this will not in any case increase objectionably the amount of alcohol, or even if it should be thought to do so by an individual practitioner, we have the fl. extracts, which can be diluted as required.

Two tinctures (tinct. cantharidis and capsici) would be raised from 4 to 10 per cent.

We have left the two strong tinctures (aconite root and verat. viride). To dilute these four and five times respectively would be an undoubted improvement, as rendering accident from overdose less liable to occur. As they now stand they approach nearer to the fluid extracts than to the tinctures.

Mr. Rice suggests that "in the case of such highly active preparations as tinct. aconiti radicis . . . tinct. veratri viridi, the present strength should be as nearly as possible retained." Such a suggestion manifestly is not a good one, if by making a change we can lessen the danger of accident from these "highly active preparations."

It is a well-known fact that, after the tinctures of opium, more cases of accidental poisoning occur from these concentrated tinct. of aconite and veratrum viride, than any other liquid preparations in the Pharmacopœia. For internal administration 10 per cent tinctures of these latter two drugs are in every way preferable; and for external use, the fluid extracts are at command.

Thus it will be perceived that only two tinctures would have their activity increased. Tr. cantharidis and Tr. capsici would be raised from 4 to 10 per cent. The danger of accident in these cases would be a minimum. In all the others, the strength either is unchanged or is reduced. No harm, therefore, could result, even if they were prescribed in the former dose.

We have thus examined four classes of preparations—dil. mineral acids, vinegars, wines, and tinctures, to show the applicability of the 10 per cent rule of strength. These serve fully to illustrate the meaning of the proposed change, and I deem it unnecessary to further examine in a similar manner such other preparations as the infusions, decoctions, spirits, and ointments. Suffice it to say that the rule is equally applicable to a large number of these latter classes, although more exceptions would be necessary than with the former.

The following is a summary of formulæ which can be brought under the rule 10 per cent:

Dilute mineral acids	6	preparations.
Vinegars	4	"
Wines	6	"
Tinctures	80	"
Spirits	12	"
Ointments	13	"
	121	

If to these we add the infusions and decoctions according to the suggestions of Mr. Charles Rice,

Brought forward	121
Decoctions and infusions	40
	161

We would thus have the strength of 161 preparations rendered uniform. What is the advantage to be derived from such a change?

1st. As has been already intimated, the great saving of

labor in learning and holding in the memory—doses. This is peculiarly apparent to students of medicine. Physicians have already, by constant application, learned these arbitrary doses; they say "the old system was good enough for us, it is good enough for those who come after us." I need not comment on such logic. The doses of *crude drugs must* be learned, and no other doses need tax the memory, if uniformity of strength be adopted.

2d. The effect it would have in simplifying the Pharmacopœia.

Aside from the advantage of a *system* over *no-system*, much useless repetition would be avoided, as for instance with the tinctures. General directions would be given for making tinctures as full and accurate as the most painstaking pharmacist could desire, and then would follow a simple list of tinctures.

Special formulæ would be given for those only which require special treatment. In the old Pharmacopœia, the formula and specific directions for every tincture are given with tedious minuteness. The following paragraph, "moisten the powder with two fluid ounces of diluted alcohol, pack it firmly in a conical percolator and gradually pour diluted alcohol upon it until two pints of tincture are obtained," are repeated almost in the same words, no less than thirty-three times.

A movement has been on foot for several years past looking towards the adoption of an International Pharmacopœia.

"1860. The celebrated chemist, Dumas, demanded, in the preface of the French Codex, the unification of the codexes of all parts of the world."

"1865. At the first Pharmaceutic Congress meeting at Brunswick, the question of uniformity of medical preparations and doses filled several sittings. Dankworth made a favorable report . . . which was unanimously adopted."

"1867. At the second Pharmaceutical Congress of Paris, where were present delegates from seventeen nations, the question of establishing everywhere the uniformity of officinal preparations was commended; to study the means of composing a codex or legal formulary which could be accepted as universal in all civilized countries. This Congress of 1867 decided that a universal codex must be adopted."

"1869. Third Intern. Pharm. Congress met at Vienna, where the question of a universal codex came up again. The decisions of the former Congress were reaffirmed, and the Society of Pharmacy of Paris intrusted with the work preparatory to the realization of the plan of a uniform Pharmacopœia."

A report was prepared by the Soc. of Pharmacy of Paris, but was delayed by the Franco-Prussian war and presented by Boudet, in 1874, to the International Pharmaceutical Congress at St. Petersburg.

"1876. A similar report was presented to the Intern. *Medical* Congress by Gille."

An article containing the foregoing information, and much more of a similar character, was published by Dr. E. Seguin, in the *Medical Record* for August, 1876. What I have quoted is sufficient to show a general interest in the subject, and the importance of securing uniformity as far as possible in the Pharmacopœia.

There is little doubt that, before many years have passed, an international standard of materia medica will have been adopted, just as the United Kingdom have adopted one standard to take the place of the old London, Edinburgh, and Dublin pharmacopœias, and just as we are even now progressing rapidly toward an international system of weights and measures. The more nearly we conform the Pharmacopœia of 1880 to the requirements of such an international standard, the better it will be for the profession, and the more easily shall we be able to accord with other nations.

Zeitschrift fuer das Chemische Gross-Gewerbe. Ed. Jul. Post. 8vo. The price of this valuable quarterly has been reduced to 8 marks per annum.

TRADE NOTES AND NOVELTIES.

McKELLWAY, apothecary, of 1410 Chestnut st., and Walnut and Twentieth sts., Philadelphia, sends us samples of the **Cupric Test Pellets** made by him, as a convenient mode of making use of Fehling's test for glucose. Some two or three years since, Dr. Piffard, of this city, suggested the use of pellets for this purpose, but we do not remember that he proposed to do more than use them for qualitative tests. Pellets prepared by Mr. Reichhardt, of 28th st. and Fourth ave., in this city, have been used with satisfaction by many physicians. Recently an English writer has proposed the same mode of using the test, and without giving Dr. Piffard the credit of their origination, offers a formula for cupric pellets, with the difference that they are to be used for quantitative analysis. The pellets kindly sent to us by Mr. McKellway are compressed, and each one is said to represent 1 cubic centimetre of Fehling's test-solution, capable of reducing 5 milligrams of glucose. These pellets are so conveniently carried that their use cannot fail to become popular, if they are found by experience to be reliable.

S. S. WHITE, of Philadelphia, whose **dental goods** are almost universally known, prepares a complete line of dentifrices, mouth-washes, for the trade, samples of which have been supplied for our inspection.

Tooth-powders from recent approved formulas are put up in one-half pound cans, from which variously shaped bottles can be filled, or it can be sold in quantities to suit customers. **Bottles** for holding tooth-powder, and furnished with metallic screw caps, enable the powder to be distributed on the face of the brush, and avoids caking the whole mass by the introduction of water. **Tooth-soaps** flavored with either rose or mint are also prepared with a view to their purity, and to fit them for cleansing the interior of the mouth. Among the **mouth-washes** a choice may be had: "Oralia," "Saponaceous Mouth-Wash," "Teaberry Mouth-Wash," "Salicylic Acid Mouth-Wash," "Bouquet Mouth-Wash," "Toilet Mouth-Wash," being variously adapted to different tastes and occasions. None of the goods supplied by this house are of inferior grade, and the retail dealer can do no better than to supply himself with stock of its manufacture.

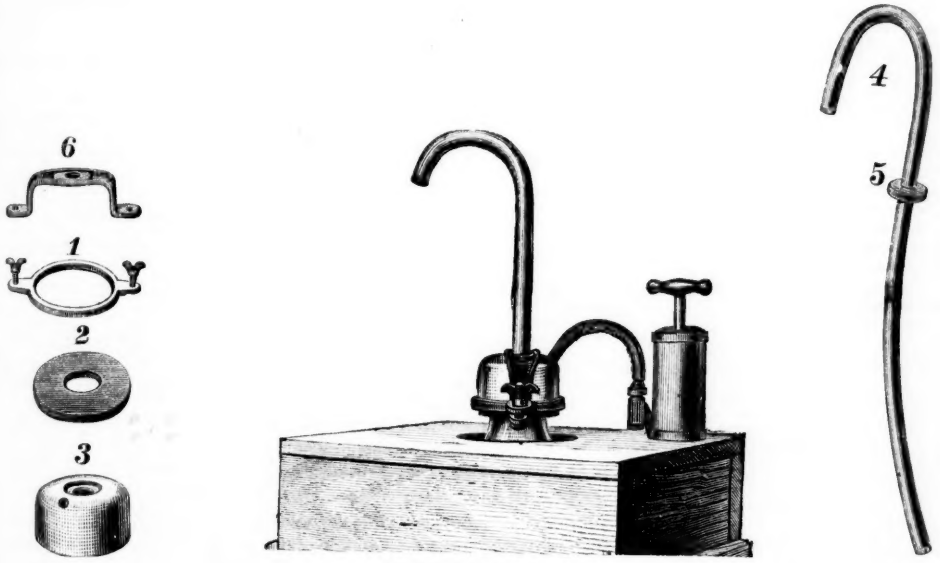
Among the toilet articles that have lately come to hand we have to note the **Aromatic Cachous,** made by HOOPER, of London Bridge. The "Aromatic Cachou Lozenges" are put up in sliding boxes, having interior springs which keep them closed when carried in the pocket or dressing-bag. The "Cachou Aromatisé" are coated with foil, and enclosed in flat boxes of pasteboard or brass, so constructed that by turning the cover to one side a hole in the false-cover is uncovered and a cachou is allowed to escape. The "Ladies' Cachou" is of lozenge shape and delicately flavored to suit the class for whom it is intended.

Another of the specialties of this house is a "Fragrant Pastille," of conical shape, intended to impart, by combustion, a fragrance to rooms, closets, etc., for the purpose of covering the presence of unpleasant odors, etc.

The novelty in **Soaps** is the **"Army and Navy Bouquet,"** made by CHAS. McKEONE SONS & CO., of Philadelphia and New York. This soap appears to be remarkable for its good quality, delicate odor, and the attractive manner in which it is put up for the market, in which respects it is quite equal to the favorite French brands. It will undoubtedly become a popular variety among choice soaps.

THE BUCKLAND MALT EXTRACT CO., of Fremont, Ohio, are putting upon the market a variety of malt preparations made according to the Trommer process. The samples that we have noticed appear to be well prepared and worthy of a place with the products of older manufacturers.

MR. JOHN MATTHEWS, of New York, has for sale an **Apparatus for drawing Caustic Fluid** from carboys that we have not before illustrated, but which is worthy of attention on account of the ease with which it is operated, and the simplicity of its construction. It consists of a bent glass tube, which is fitted into the neck of a carboy by means of India-rubber packing and clamps, so as to render the connection air-tight, except at an opening in the side of the metallic cap (3). Into this opening the end of an India-rubber tube is forced, and by means of an air-pump affixed to the other extremity air is forced into the carboy until the contents are expelled through the glass tube. When it is desired to stop the flow, the end of the rubber tube is withdrawn from the hole in the cap, and instantly the pressure of air in the carboy ceases, and the fluid in the tube falls back into the vessel. The adjoining figures show sufficiently well the arrangement of the parts of the apparatus. The cost is $15.



Matthews' Acid Dispenser.

1. Ring which passes over the neck of the carboy, and which by means of the strap (6) keeps the rubber packing (2) forced against the edge of the cup (3), thus forming a tight joint. At the same time the rubber packing (5) on the tube (4) is held firmly in its seat, in the top of the cup (3), and the opening at this point is rendered tight.

PRESCRIPTIONS AND FORMULÆ.

We shall be obliged if our readers, who make use of these formulæ, will inform us of their experience with them, and note any errors or modifications worthy of attention.

Dujardin-Beaumetz's Diarrhœa Mixture.—

Subnitrate of bismuth	10 gm.	= 155 grs.
Wine of opium	10 drops	= 10 drops.
Peppermint water	10 gm.	= 2½ fl. ʒ
Syrup of krameria	30 "	= 1 fl. ʒ
Lettuce water	70 "	= 2⅜ fl. ʒ

—Petit Mon. de la Méd.

N.B.—*Lettuce water* is occasionally yet prescribed in Italy and France. It is kept in the shops in a concentrated form, which is prepared thus: 1000 parts of fresh garden-lettuce are cut, covered with 2500 parts of water, and 1000 parts distilled off. The distillate, having been mixed with 10 parts of alcohol, is again distilled, but only 200 parts of distillate are collected, which is preserved in small, completely filled, and well-closed vials. When used, it is first diluted with 4 times its weight of water.—ED. N.R.

Polygraph Composition and Ink.—The following compositions may be added to those formerly quoted by us:

1. Gelatin ..... 100 parts.
   Water ..... 375 "
   Glycerin ..... 375 "
   Kaolin ..... 50 "
   (*Lebaigue.*)

2. Gelatin ..... 100 parts.
   Dextrin ..... 100 "
   Glycerin ..... 1000 "
   Sulphate of barium ..... q. s.
   (*W. Wartha.*)

3. Gelatin ..... 100 gm.
   Glycerin ..... 1200 "
   Moist sulphate of barium washed by decantation ..... 500 c. c.
   (*W. Wartha.*)

4. Gelatin ..... 1 part.
   Glycerin (30° B.) ..... 4 parts.
   Water ..... 2 "
   (*Kwaysser and Husak.*)

Polygraphic Inks.

1. "Violet de Paris" ..... 10 parts.
   Water ..... 30 "
   (*Lebaigue.*)

2. "Violet de Paris" ..... 1 part.
   Water ..... 7 parts.
   Alcohol ..... 1 part.
   (*Kwaysser and Husak.*)

3. Acetate of Rosaniline ..... 2 parts.
   Water ..... 10 "
   Alcohol ..... 1 part.
   (*Kwaysser and Husak.*)

The first two produce a violet, the last named a red copy.

Medicated Crayons.—The following are formulæ recommended by Legras, for crayons to be used in the treatment of affections of the eyes and face. They are enveloped in tinfoil and paper, to keep them from melting in the hand.

1. *Crayon of Red Precipitate:*

Red precipitate	1.5 gm.	= 23 grs.
Glycerin	10 "	= 150 "
Cacao butter	20 "	= 300 "

2. *Crayon of Oil of Cade.*

Oil of cade	15 gtt.	= 15 gtt.
Glycerin	10 gm.	= 150 grs.
Cacao butter	20 "	= 300 "

3. *Crayon of Iodoform, deodorized.*

Iodoform	30 gm.	= 460 grs.
Oil of peppermint	6 gtt.	= 6 gtt.
Glycerin	10 gm.	= 150 grs.
Cacao butter	20 "	= 300 "

4. *Crayon of Corrosive Sublimate.*

Corrosive sublimate	1 gm.	= 15 grs.
Glycerin	13 "	= 200 "
Cacao butter	27 "	= 415 "

5. *Crayon of Balsam of Peru.*

Balsam of Peru	5 gm.	= 75 grs.
Glycerin (or vaseline)	5 "	= 75 "
Cacao butter	20 "	= 300 "

6. *Crayon of Turbith Mineral (Yellow Subsulphate of Mercury).*

Turbith mineral	1 gm.	= 15 grs.
Salep in fine powder	2 "	= 30 "
Glycerin	10 "	= 150 "
Cacao butter	20 "	= 300 "

7. *Crayon of Tar.*

Norway tar	5 gm.	= 75 grs.
Vaseline	5 "	= 75 "
Cacao butter	20 "	= 300 "

8. *Crayon of Opium and Belladonna.*

Extract of opium	5 gm.	= 75 grs.
" " belladonna	5 "	= 75 "
Glycerin	5 "	= 75 "
Cacoa butter	20 "	= 300 "

9. *Ophthalmic Crayons.*

a) Red precipitate	3 gm.	= 45 grs.
Oxide of zinc	3 "	= 45 "
Acetate of lead	3 "	= 45 "
Burnt alum	3 "	= 45 "
Corrosive sublimate	0.45 "	= 7 "
Glycerin	10 "	= 150 "
Cacao butter	20 "	= 300 "
b) Red precipitate	0.30 gm.	= 5 grs.
Sulphate of zinc	0.60 "	= 10 "
Vaseline	10 "	= 150 "
Cacao butter	20 "	= 300 "
c) Red precipitate	1.50 gm.	= 23 grs.
Camphor powd.	1.50 "	= 23 "
Acetate of lead	1.50 "	= 23 "
Vaseline	10 "	= 150 "
Cacao	20 "	= 300 "

Répert. de Pharm.

Hebra's Diachylon Ointment.—A. DERINGER, in Zarskoe-Szelo proposes to prepare this, not from the officinal emplastrum plumbi, but from oleate and margarate (*sic*) of lead, obtained by precipitating a solution of soap with acetate of lead.

Dissolve 200 gm. of acetate of lead in 1 litre of distilled water, and 300 gm. of white Castile soap in 1½ litre of warm distilled water. Filter both solutions and mix them. The precipitate is washed with water, then freed from moisture as much as possible by kneading and 1 part of it melted together with 1½ parts of best olive oil on the water-bath. The mixture is afterwards triturated in a mortar until it forms a fine, white salve. In this condition it partakes of all the advantages of Hebra's ointment.—*Pharm. Zeitsch. f. Russl.* and *Pharm. Centralh.*

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

No. 741.—**Detection of Bromide in Iodide of Potassium** (Correspondent; Greece).

One of the most reliable methods is the following: Dissolve 1 part of the suspected salt in 40 parts of water, warm the solution on the water-bath, add to it a little sulphate of copper, and evaporate it, in order to drive off the iodine which has been set free. This is to be repeated as long as any iodine escapes. The saline residue finally remaining must have a distinct but only faint green color. Exhaust this residue gradually with small quantities of water, filter the liquid from cuprous iodide, and evaporate the filtrate on the water-bath. If any bromine was present, the inner wall of the capsule becomes gradually colored black from deposition of anhydrous cupric bromide, which latter may be quickly redissolved, by a drop of water, to a pale-green liquid, while, on further evaporation, the black rings again make their appearance.

Another method is the following: Dissolve 2.5 gm. of the suspected salt in 25 cc. of water, add to it a solution of 5 gm. of crystallized cupric sulphate and 8 gm. of crystallized ferric sulphate in 50 cc. of water, let the mixture stand in a cool place for an hour, filter, wash the precipitated cuprous iodide (Cu_2I_2) with cold water, strongly acidulate the filtrate with nitric acid, precipitate with argentic nitrate, and shake well. The cuprous iodide is thoroughly dried on the water-bath, or some other place at a temperature of 90°–100° C., and weighed. Its weight must amount to at least 2.2 gm. (theoretically 2.3), in which case the salt may be assumed to be free from bromide. On the other hand, the precipitated silver salt, which contains any bromine or chlorine originally present in the iodide of potassium, is allowed to deposit, and washed by repeated decantation—without exposure to light. It is then shaken for a minute or so with a mixture of 3 cc. of water of ammonia and 6 cc. of distilled water, after which the solution is filtered. The ammoniacal filtrate contains all the chloride of silver present in the precipitate, together with a faint trace of silver bromide, while the undissolved residue consists of silver bromide. The latter is washed, dried, and weighed. Its weight, multiplied with 0.633 gives the total quantity of potassium bromide in 2.5 gm. of the potassium iodide under examination. The chemical reactions involved are the following:

$$2CuSO_4 + 2FeSO_4 + 2KI = K_2SO_4 + Fe_2(SO_4)_3 + Cu_2I_2$$

No. 742.—**Apparatus for the Manufacture of Sulphuric Acid, Ether, etc.** (Baltimore Reader).

There are a number of works in which the manufacture of sulphuric acid is minutely described, with illustrations of the most approved forms of apparatus. You may either consult *Muspratt's Chemistry*, new edition, or better still: *Lunge* (*Dr. George*), *Handbuch der Soda-Industrie*, 2 vols. 8vo, Braunschweig, 1879–80; also published in English in London. This work is just completed and gives the most

minute details of all manufactures having any relation to the soda or acid industry.—There is no work known to us which gives illustrations of all the more commonly used forms of apparatus used by different manufacturers in the preparation of ether, and sweet spirits of nitre. Illustrations of some forms of apparatus are scattered here and there, through text-books, etc., but the best forms of apparatus have never been illustrated, to our knowledge. The reason is this, that manufacturers who by long and costly experience have improved their apparatus to their own satisfaction are neither willing to publish such illustrations themselves, nor would readily permit others to do so. None of the forms of apparatus illustrated in the ordinary text-books answers for working on the large scale. At least, all of these illustrations represent only the rough idea of the apparatus, there being usually many more parts, either for greater safety or for more convenience, attached to them. A good form of apparatus, however, for making ether which may easily be adapted to a large scale by any practical chemist is figured in the valuable work: *Stieren* (*Dr. Edward*), *Chemische Fabrik*. 8vo, München, 1865, which may be had from book-dealers in New York (f. i., G. E. Stechert, 766 Broadway).

No. 743.—**Hoang-Nan** (W. S., New York).

Full information, both historically and therapeutically, on this remedy, you will find in the work of Lesserteur quoted in this number under Bibliography, page 214.

No. 744.—**Churchill's Compound Syrup of Hypophosphites** (H. G. H.).

The following is the formula as usually given:

Hypophosphite of	calcium	256 grains.
"	sodium	192 "
"	potassium	128 "
"	iron, moist	69 "
Hypophosphorous acid		240 "
Syrup of vanilla		8 fl. oz.
Boiling water		q. s.

Triturate the hypophosphites in a large mortar, gradually adding about 4 fl. oz. of boiling water and the acid; decant the clear liquid, add a little more boiling water, and triturate again until the salts are dissolved. Then filter, and pass enough water through the filter to make the solution measure 8 fl. oz. To the solution, while still warm, add the syrup of vanilla, previously acidulated with a little hyposphorous acid, and mix.

The *American Pharmaceutical Association*, in 1874, adopted the following formula:

Hypophosphite of	calcium	256 grains.
"	sodium	192 "
"	potassium	128 "
Green sulphate of	iron	185 "
Hypophosphorous acid (1.036)		9 fl. 3.
Sugar		12 troy oz.
Water		q. s.

Dissolve 96 grains of the hypophosphite of calcium in 4 fl. oz. of water, with the aid of heat, and acidulate the solution with a small portion of the hypophosphorous acid. Dissolve the green sulphate of iron in 2 fl. oz. of water; mix the two solutions, and allow the mixture to stand until the sulphate of calcium, which is precipitated, has subsided, and pour the whole on a paper-filter. After the clear solution has passed through the filter, wash the adhering hypophosphite of iron from the sulphate of calcium with a small quantity of water, acidulated as before, and preserve the solution. Dissolve the remainder of the hypophosphite of calcium with the other two hypophosphites in 4 fl. oz. of water, with the aid of heat, adding the remainder of the hypophosphorous acid. Mix the solutions, adding enough water to make the whole measure 10 fl. oz., which pour into a bottle containing the sugar, and agitate the mixture occasionally until the solution is complete.

In our next issue you will find Dr. Churchill's newly devised formula for a *Compound Solution of Hypophosphites*, which he recommends to be given with raisin or Carlowitz wine, but which may also be made into a syrup.

SOCIETY REPORTS.

Kentucky Pharmaceutical Association.—Report of Annual Meeting.

First Session.

The Association met pursuant to call, at Owensboro, on Monday, May 18th, 1880. The President, Mr. Vincent Davis, read his annual address which was replete with wholesome advice and suggestions looking to the furtherance of the objects of the Association, and was listened to with marked attention. Among other important subjects, the President alluded to the failure of the Association, in co-operation with the State Board of Pharmacy, to secure further legislation during the past session with a view to make the law apply to the entire State. He stated that the passage of a bill to this effect had been secured in the Senate early during the session, but that in the House it was unfortunately referred to a committee, the chairman of which, from motives probably sufficient for him, had simply pocketed the bill, and thus prevented action upon it by that branch of the legislative assembly. He expressed the opinion that but for the singular conduct of the Chairman the bill would have become a law with a good majority, and recommended that the Committee on Legislation be instructed to prepare and to present at the next annual meeting a plan which shall secure the co-operation of pharmacists throughout the State in presenting the objects and desirability of a general law to the gentlemen that may constitute the next legislature.

The Executive Committee reported the names of a number of pharmacists for membership, when a ballot was ordered and the same were elected.

The reports of the Secretary and of the Treasurer were then read, and, together with the President's address, appropriately referred.

In accordance with a provision of the by-laws of the Association, the President then appointed a Nominating Committee of five members, selected from different sections of the State, to make nominations for the officers and Standing Committees for the ensuing year, with instructions to report at the next session, whereupon the Association adjourned to hold a second session at 4.30 o'clock P.M.

Second Session.

The Association was called to order promptly at 4.30 P.M. The minutes of the first session were read and adopted. The Committee to whom was referred the President's address reported favorably on that portion of the address recommending certain instructions to the Committee on Legislation. On motion, the report of the Committee was received and adopted, the Committee discharged, and the Committee on Legislation instructed in accordance with the resolution.

The committee to whom the report of the Treasurer was referred reported their inability to report at this time, owing to the absence of the Treasurer and his omission to forward certain vouchers. On motion, the Committee was continued with instruction to report to the Executive Committee.

In the absence of the Committee on Papers and Queries, Mr. Diehl, Chairman of the Business Committee, called for answers to the queries accepted at the last annual meeting.

Query 1. "On the amount of empyreuma that may be present in liquor ammonia without interfering with the preparations into which it enters," was answered by Mr. F. C. Miller, to the effect that even small traces of empyreuma are objectionable. The same author gave partial replies to query 9 ("On the best method of making galenical preparations of Viburnum prunifolium") and query 10 ("An Essay on the barks of Rhamnus Purshiana and Rhamnus Frangula, their comparative value and the best method of making their galenical preparations"). Mr.

Miller promises to continue his investigations and report at the next annual meeting.

Mr. C. S. Porter, in answer to query 3, contributed a very interesting essay "On the probability of the adoption of the metric system of weights in the practice of medicine and pharmacy, and the advantages that might be derived therefrom." The author is of the opinion that, while the system presents many advantages, securing uniformity in the expression of quantities in a large portion of the civilized world, diminishing the liability to error as soon as physicians and pharmacists shall have become thoroughly conversant with it, etc., etc., he nevertheless does not think that the time has arrived to make its use obligatory, believing that its introduction can only be gradually accomplished, and that, therefore, its adoption should only be provisional.

Query 5, "Is a law regulating the practice of pharmacy in this State generally, feasible at this time, and what should its provisions be?" was replied to by Mr. Vincent Davis. The author takes very decided ground in favor of a general law for this State, and, with his experience with the present law—which applies to towns of 5,000 inhabitants and over—to support him, feels justified to maintain that such a law is perfectly feasible if it is made to apply only to stores in which the prescriptions of medical practitioners are compounded.

In reply to query 6, "On the best method for the Extraction of Guarana to secure the greatest quantity of Guaranin with the least possible quantity or percentage strength of alcohol," Mr. H. H. Rademaker says: that commercial (stronger) alcohol is the best solvent, but that a mixture of 3 volumes of alcohol may be made available if a slight sacrifice of the alkaloid is admissible. The author, furthermore, recommends the method of Prof. Wayne for the extraction of caffein (*Am. Jour. Pharm.*, 1857, p. 68), as the most suitable for the estimation of guarania.

Mr. John Colgan in reply to query 7, "On the most suitable menstruum for preparing fluid extract from Viscum album," states that he has found a mixture of 2 parts of alcohol (stronger?), 1 part of water, and 1 part of glycerin, all by volume, to be the best adapted for the purpose.

Mr. C. Lewis Diehl replied to query 11, "How should Bonjean's Ergotin be prepared and what advantage, if any, does it possess over the Extract of Ergot of the German Pharmacopœia?" The author records a series of experiments which show that Bonjean's ergotin and the extract of ergot of the German Phar. are very different preparations, notwithstanding that the latter is intended to replace the former. The former probably contains chiefly sclerotic acid; the latter in addition also the scleromucin with, perhaps, inert extractive matter. Inasmuch, however, as scleromucin is stated to be nearly, if not quite, as active as sclerotic acid, the two preparations may, weight for weight, be equally effective, and if so, the process of the Ger. Phar. would be the preferable one, since it yields the largest product at the least expense. To decide this point comparative physiological experiments are needed.

There appearing no further papers or communications, the Nominating Committee presented the following nominations for officers and standing committees to serve during the ensuing year:

For President, M. H. Webb, of Simpsonville; *First Vice-President*, S. H. Ford, of Owensboro; *Second Vice-President*, Geo. H. Cary, of Louisville; *Third Vice-President*, Henry Megill, of Owensboro; *Rec. Sec.*, W. G. White, of Richmond; *Corres. Sec.*, C. S. Porter, of Eminence; *Treasurer*, Peter Nodler, of Covington.

Executive Committee.

Emil Scheffer, Louisville, *Chairman;* P. F. C. Biehl, Louisville; F. C. Miller, Louisville.

Committee on Papers and Queries.

C. Lewis Diehl, Louisville, *Chairman;* S. H. Ford, Owensboro; Geo. A. Newman, Louisville.

Business Committee.

Vincent Davis, Louisville, *Chairman;* J. W. Carter, Owensboro; Jefferson Oxley, Nicholasville.

Committee on Legislation.

C. S. Porter, Eminence, *Chairman;* Jefferson Oxley, Nicholasville; S. H. Ford, Owensboro.

On motion, the report was accepted, and the Association proceeded to ballot for President, when Mr. Webb was unanimously elected.

The remaining officers and the Standing Committees were then elected by the cast of a single ballot.

The Chair appointed Messrs. Geo. H. Cary and Henry Megill to conduct the President elect to the chair.

On taking the chair, Mr. Webb briefly addressed the Association, expressing his appreciation of the honor conferred, and the hope that under his administration the Association may prosper as its best friends only can wish.

After the customary resolutions of thanks to the retiring officers, the resident members, and the press, the minutes of the second session were read and adopted, and the Association adjourned at 7 o'clock P.M. to meet in Louisville during the month of May, the day and date to be determined upon and announced by the President with the advice of the Executive Committee.

Ohio State Pharmaceutical Association.

This association met at Cleveland, Ohio, on the 19th of May, this being the second meeting. Following the opening of the meeting by the President,

Dr. J. F. Judge, of Cincinnati, 145 new members were elected. Dr. S. S. West, of Cleveland, Chairman of the Executive Committee, reported the business transacted since the last meeting, and reports were received from the Secretary and Treasurer.

The following papers were read:

"On Valerian Root," by Mr. L. C. Hopp, of Cleveland. "On the Preparation from Petroleum of a Substance Similar to Vaseline, Petroline, Paraffin, etc.," by Mr. R. C. Clark, of Cleveland, read by the Secretary. "Laboratory Notes," by Mr. N. Rosenwasser, of Cleveland, all of which were referred to the Publication Committee.

A telegraphic dispatch was received from the pharmacists in session at Syracuse, New York, greeting the Ohio pharmacists in session at Dayton, also referring us to Acts xxviii. chapter, 12th verse—"And landing at Syracuse, we tarried there three days." A greeting was returned.

An invitation was received from the pharmacists of Dayton to visit the National Soldiers' Home on the following day and was accepted.

A Committee on Nominations was appointed, consisting of R. M. Byrnes, of Cincinnati; Dan. Myers, of Cleveland, and Ernst Schuyler, of Columbus; also

A Committee on Inspection and Manufacturing Druggists' Displays, consisting of J. A. Nipgen, of Chillicothe, J. J. Hurst, of Yellow Springs, and F. J. Johnson, of Bucyrus. The meeting then adjourned for fifteen minutes.

Upon reassembling, the question of the next place of meeting was discussed, resulting in the choice of Toledo.

The following were elected *Delegates to the American Pharmaceutical Association:* J. U. Lloyd, of Cincinnati; ——Harrington, of Logan; T. J. Casper, of Springfield; Chas. Huston, of Columbus; and Chas. M. Toby, of Troy. *Alternates:* Chas. Smith, of Springfield, ——, of Cincinnati; A. Smith, of London; Dr. Benedict, of Cleveland; and——, of Cincinnati.

During the evening session the following-named gentlemen were elected to office for the ensuing year:

President—J. W. Dietrich, Dayton. *First Vice-President*—J. F. Judge, Cincinnati. *Second Vice-President*—H. C. Gaylord, Cleveland. *Secretary*—L. C. Hopp, Cleveland. *Treasurer*—Charles Houston, Columbus. *Executive Committee*—T. J. Casper, Springfield; J. A. Nipgen, Chillicothe; J. U. Lloyd, Cincinnati.

Following the installation and response of the new President, the following was moved by Mr. Ch. Houston, of Columbus:

"*Resolved*, That it is the sense of this association that most vigorous efforts should be made for the entire repeal of 'Schedule A' of the United States Revenue Law. It is also the sense of this body that each member should use every effort to remedy this evil, inasmuch as the penalties incurred for non-fulfilment of the law might be so heavy as to entail total destruction to dealers of small means."

The resolution was adopted after discussion, likewise a motion to appoint a committee to memorialize Congress on the subject, as follows. Prof. Judge, of Cincinnati; Thomas Dover, of Dayton; and James M. Ayres, of Cincinnati.

The Committee on the Pharmacy Act, consisting of R. M. Byrnes, J. M. McCoy, T. J. Casper, O. S. Wuesthoff, and C. R. Cornell, recommended that steps be taken to have the existing law so amended as to apply to all cities and towns of 5,000 (and over) inhabitants. They also recommended the amendment or entire abolition of the present "Poison-Law" which they considered to be ill-adapted for the purposes designed and productive of annoyance and discomfort both to customers and pharmacists. Poisons such as strychnia, arsenic, etc., it would be well to have registered, but to such articles as sulphate of zinc the law should not apply.

In the course of the discussion of the report, the question of the number of Boards of Examiners received attention. Some of the speakers advocated the establishment of a Board in each county; others, district boards, and still others thought that two Boards, one at Cincinnati and the other at Cleveland, would best accomplish the object of the law, viz., the prevention of incompetent persons acting as pharmacists. At present the law applies only to Cincinnati.

The Committee on Papers and Queries reported the following subjects for papers to be read at the next meeting:

"Can some insoluble substance be used in the place of carbonate of magnesium which shall answer the same purpose in the preparation of medicated water?" Prof. Judge.

"Would the substitution of citrate of sodium for citrate ammonium in the officinal pyrophosphate of iron make the latter less liable to become insoluble on keeping?" Prof. Judge.

"An examination of the residuum liquid from Hydrastis Canadensis, from which Berberia has been separated, with a view to establish the identity of the acid with which the alkaloids are naturally combined." N. Rosenwasser, of Cleveland.

Can fluid extract of ginger be made with 40% alcohol, without being done at the expense of the resinous principle of the ginger? N. Rosenwasser.

"Aromatic spirit of ammonia has been proposed as a menstruum for exhausting lupulin. Has this any advantage over alcohol?" N. Rosenwasser.

"What is the best process for the preparation of the resin of Leptranda virginica, and what is the average yield of the root?" L. C. Hoff, of Cleveland.

"Fruit syrups; an essay on them with special reference to their probable adoption in the Pharmacopœia." Dr. G. W. Conner, of Xenia.

"Should a formula for cologne water be made officinal? And if so, what formula is best adapted?" John Ruport.

"How to prevent acidum sulphuricum aromaticum from depositing a precipitate." Mr. Toby.

"All will concede that the druggist is the proper custodian of the prescription, but to whom does the prescription belong, as personal property?" Dr. Ayres.

"Should an apprentice be taken for a less period than three years?" John Wever.

The thanks of the Association were returned to the druggists of Dayton for their hospitalities and assiduous attention; to Mr. O. S. Wuesthoff, local Secretary, and to the daily press for their reports.

At half-past ten P.M. the Association adjourned till the third Wednesday of May, 1881.

New Jersey Pharmaceutical Association.

The tenth annual meeting of the New Jersey Pharmaceutical Association was held at Boerum Hall, Jersey City, on Wednesday and Thursday, May 19th and 20th, President A. S. White, of Mount Holly, in the Chair. The attendance was large, all sections of the State being represented. After the address of the President, reports were received from the State Board of Pharmacy and the delegates to the American Pharmaceutical Association. Several interesting and instructive papers were presented. Mr. F. B. Kilmer, of New Brunswick, answered the query "To what extent is it practicable for pharmacists to manufacture their own chemicals?" Mr. Randall Rickey, of Trenton, read a paper on the Metric System; Mr. D. W. Brant, of Newark, one entitled "American Enterprise;" Mr. J. R. Mercein, of Jersey City, answered the query "What can be done to encourage our young men to become better pharmacists?" and Mr. A. C. Peters, of Newark, the query, "What indigenous plants can be profitably gathered in New Jersey?" and E. P. Nichols, M.D., of Newark, read a paper on "Medical Criticism."

The following officers were elected: *President*, W. R. Laird, Jersey City; *Vice-Presidents*, A. Walker, Freehold; A. G. Smith, Belvidere; *Treasurer*, Wm. Rust, New Brunswick; *Rec. Secretary*, A. P. Brown, Camden; *Cor. Secretary*, R. W. Vandervoort, Newark. Messrs. G. H. White, C. B. Smith, R. J. Shaw, D. W. Brant, and A. P. Brown were appointed delegates to the American Pharmaceutical Association. Delegates were also appointed to visit the State Associations of Pennsylvania, New York, New Hampshire, and Connecticut.

The members of the Association were very hospitably entertained by the pharmacists of Jersey City.

On Thursday, after adjournment, the sugar refinery of Matthiessen & Wiechers was visited, and the Association was then taken on a steam tug to inspect the institutions on Blackwell's Island.

This was one of the most interesting meetings ever held by the Association. The next annual meeting will be held in Trenton, on the third Wednesday in May, 1881.

American Pharmaceutical Association.

The twenty-eighth annual meeting of the American Pharmaceutical Association will be held at Saratoga Springs, New York, on Tuesday, Sept. 14th, 1880, commencing at 3 o'clock P.M.

It is expected an important change in the business arrangements of the Association will be reported by the committee appointed for that purpose; several interesting papers will be presented. In view of the celebrity of the location of the meeting, an unusual large attendance is confidently expected.

Exhibitors are requested to correspond with the Local Secretary, Mr. Charles F. Fish, for any information connected with that department. Exhibitors should bear in mind that, in order to secure an advantageous display, their application for space should be made early, and the goods for the exhibit should be in the hands of the Local Secretary some days before the meeting.

It is desirable that the members of the Association render the Committee upon Membership as much aid as possible.

Chairmen of Standing Committees are requested to furnish a copy of their respective reports, together with a synopsis of the same to the Chairman of the Committee on Papers and Queries, Mr. J. U. Lloyd, Cincinnati, Ohio, as required by Article IX., Chapter VI. of the By-laws.

In a like manner, all persons writing a paper for the Association, whether volunteer or in answer to a query, will report to the same Chairman (see Article VIII., Chapter VI., By-laws), and it is requested that such paper, with a synopsis of same, be in the hands of the same Chairman before the opening of the first session.

Further information concerning the meeting and the

arrangements made will be given in the circular of the Permanent Secretary, Prof. J. M. Maisch, 145 North Tenth Street, Philadelphia. GEORGE W. SLOAN,
INDIANAPOLIS, June, 1880. *President.*

Wisconsin State Pharmaceutical Association.

A meeting of the Druggists of the State, to be held in Madison, July 14th and 15th, for the purpose of organizing a State Pharmaceutical Association.

Every effort is being made to make this meeting a successful and profitable one, and there is every indication of a large attendance.

Reduced rates have been secured on the M. and St. P., and C. and N. W. R. Roads, *i. e.*, full fare one way, and return on certificate of Secretary at one-fifth fare. Special arrangements have been made for hotel accommodations. The meetings will be held with the Rock Co. Pharmaceutical Association in the Assembly Chamber, and, as nearly as practicable, the following programme will be observed:

Wednesday, July 14th.

10 A.M.—Meeting of the Rock Co. Pharmaceutical Association. Election of officers; report of committees; miscellaneous business.

2 P.M.—Meeting called to order, and temporary chairman elected; constitution and by-laws for State Association adopted; election of officers; appointment of committees; miscellaneous business.

Address by E. B. Stuart, of the Chicago *Druggist*, and Secretary of Ill. Microscopical Association. Subject, "The Application of the Microscope in Pharmacy."

Thursday, July 15th.

10 A.M.—Reports of committees; miscellaneous business.

2 P.M.—Joint session of the Wisconsin Pharmaceutical Association and the Rock Co. Pharmaceutical Association.

Address by F. S. Fenton, of Beloit, President of the Rock Co. Association.

Reading of papers as follows:

Formula for Syrup of Rhubarb and Potassa, E. R. Smith, Beloit.

Cause of Precipitation in U. S. P. Tincture of Rhubarb, W. P. Clark, Milton.

Cause of Precipitation in Tinctures of Capsicum and Black Cohosh, and How It may be Remedied, O. L. Woodward, Clinton.

Formulas of Elixirs of Lactopeptin, A. J. Roberts, Janesville.

It is expected there will be a fine display of drugs, chemicals, and druggists' sundries, as the following houses have already signified their intention of being represented and placing goods on exhibition:

Sharp & Smith, Chicago, surgical instruments. Hurlbut & Co., Chicago, chemicals and sundries. C. H. Strong & Co., Chicago, specialties and sundries. Henry Thayer & Co., Cambridgeport, Mass., fluid extracts and pills. J. C. Huber & Co., Fond du Lac, herbs. Morrison, Plummer & Co., Chicago, drugs and drug sundries. Enterprise Manufacturing Co., Phila., drug mills and presses. Parke, Davis & Co., Detroit, pills and extracts. C. H. Penfield & Co., Phila., trusses and braces. Binghamton Oil Co., pertroleum products. Irondequoit Wine Co., Rochester, N. Y., wines.

Exhibitors of objects of interest to pharmacists are requested to send goods prepaid to A. H. Hollister, Madison, Wis., who will see that they are properly displayed and disposed of or returned, according to instructions of exhibitors.

In addition to other attractions offered, it is contemplated to arrange for an excursion on the Lake, and visit the Hospital of the Insane, and other points of interest.

Persons may be accommodated with board at private houses, at reasonable rates, by addressing A. H. Hollister, Madison, Wis.

Any further information in regard to meeting will be cheerfully supplied by addressing E. B. HEIMSTREET, Janesville, Wis.

ITEMS.

Proposed College of Pharmacy in Havana.—The editors of the *Repertorio de Farmacia* advocate the establishment, at Havana, of a College of Pharmacy, and invite the co-operation of their colleagues throughout Cuba. If we are rightly informed, this is not the first time that such a proposal was made, but heretofore nothing ever came of it.

The American Chemical Society occupies, from May 1st, 1880, Room No. 1, in the University Building, Washington Square, New York.

Exploration of Socotra.—Prof. J. B. Balfour, of Glasgow, in conjunction with Mr. A. Scott, has just returned from a scientific exploration of the island of Socotra, at the east coast of Africa, under the auspices of the British Association. The botanical collections of the expedition are to be the property of the British Museum and of the Kew Gardens.

The Wood of the Quebracho Blanco, from *Aspidosperma Quebracho* (see our March number, page 111), has been found to be admirably adapted for woodcuts.

Cypriote Bees and Honey.—One of the most celebrated products of the historical island of Cyprus, which has lately passed under English sovereignty, is honey. The Cyprian bees are a special race which never seems to have been deteriorated by crossing with those of the continent. The honey of Cyprus was already renowned in ancient times, and European bee-cultivators have at all times been eager to improve their own hives by importing queen-bees from this island. Since the beginning of March of the present year, two prominent American apiarists, Mr. D. A. Jones, of Canada, and Mr. Frank Benton, Instructor at the Agricultural College of Michigan, have resided on Cyprus for the purpose of introducing a rational system of bee cultivation. The former will return in a few months with 100 or 150 queen-bees, while Mr. Benton will remain for about one year longer, when he will transplant his Cyprian hives upon some American island, far enough distant from the coast to prevent access of domestic bees.

PHARMACEUTICAL CALENDAR.—July.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
1st, Thur.	Louisville Coll. Ph.—Pharm. Meet.
	Massach. Coll. Ph.—Trustees' Meet.
	New York Coll. Ph.—Trust. Meet.
5th, Mon.	Pittsburgh Coll. Ph.—Quarterly Meet.
6th, Tues.	Phila. Coll. Ph.—Trust. Meet.
	Maryland Coll. Ph.—Trust. Meet.
8th, Thur.	N. Y. Germ. Apoth. Soc.—Semi-annual Meeting.
	Newark Pharm. Assoc.—Monthly Meet.
	Louisville Coll. Ph.—Directors' Meet.
	Maryland Coll. Ph.—Members' Meet.
12th, Mon.	Rhode Island Pharm. Assoc.—Quarterly Meet. at Providence, R. I.
13th, Tues.	St. Louis Coll. Ph.—Pharm. Meet.
	National Coll. Ph.—Trust. Meet.
	Massach. Coll. Ph.—Pharm. Meet.
	Kings Co. Pharm. Asso.—Monthly Meet.
	Pittsburgh Coll. Ph.—Trust. Meet.
14th, Wed.	Cincin. Coll. Ph.—Business Meet.
	Wisconsin State Pharm. Assoc. — To organize. First meeting at Madison, Wis.
20th, Tues.	St. Louis Coll. Ph.—Trust. Meet.
	St. Louis Coll. Ph.—Alumni Scient. Meet.